ENGINEERING NEWS-RECORD

Park Martin: A fighter for pennies

p 47

STEVENS RICE GS N
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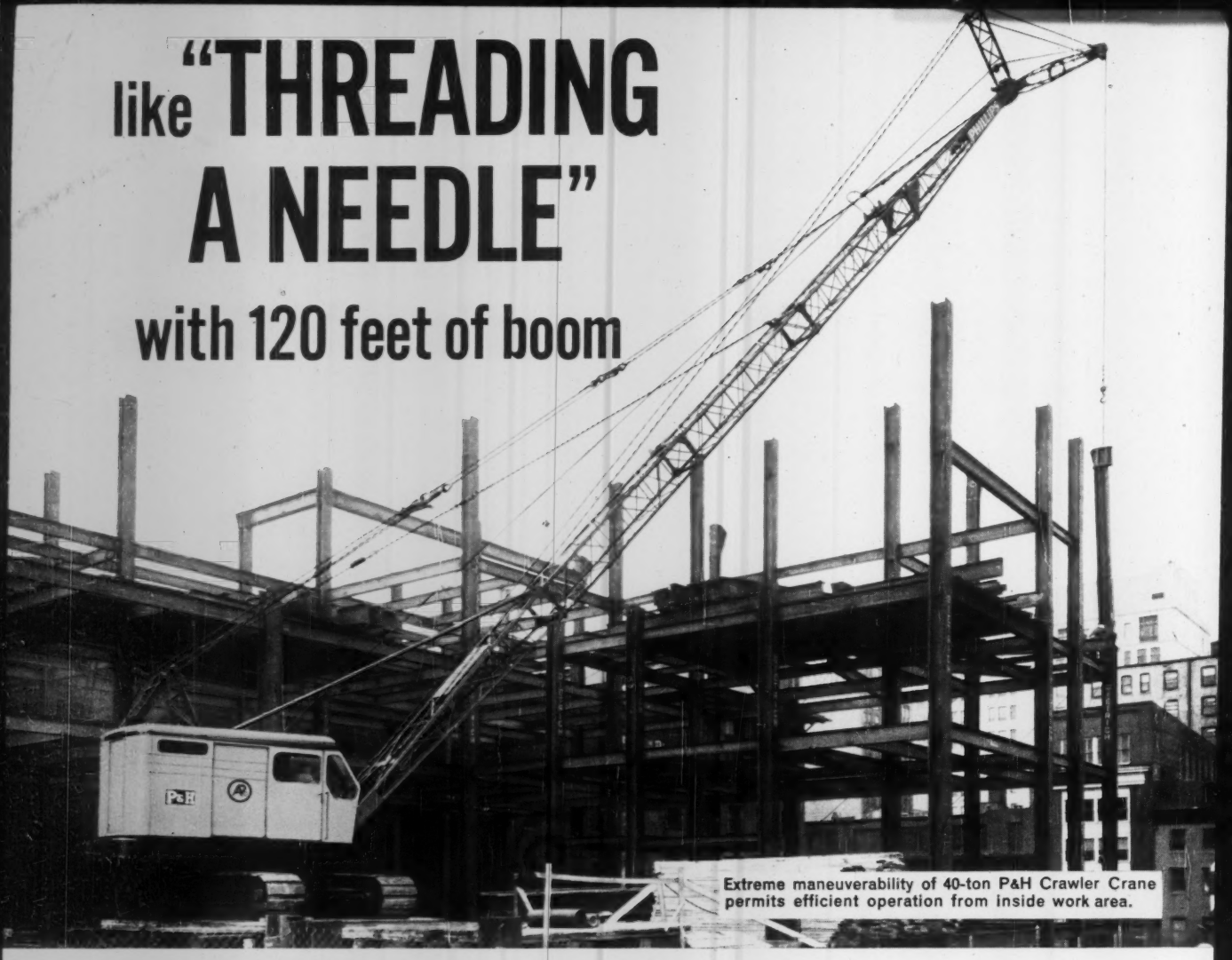
like "THREADING A NEEDLE" with 120 feet of boom



Extreme maneuverability of 40-ton P&H Crawler Crane permits efficient operation from inside work area.

ARTHUR PHILLIPS & CO. USES 40-TON P&H CRAWLER CRANE

to spot steel girders for precision joining system

Arthur Phillips and Company, steel erection contractors on the 21-story Mercy Hospital in downtown Baltimore, selected a 40-ton P&H Crawler Crane to handle the precision spotting of heavy steel girders in an unusual type of construction.

In this structural system, the precision "Saxe" clip was used for holding the steel girders for welding—demanding a crane with *outstanding control and exceptional steadiness and stability.*

This contractor found that their P&H combined the "precision control" and "rock-like steadiness" they needed to give them extreme accuracy in positioning the steel beams. It had enough capacity at long radius to make the required lifts, yet it was light enough to operate on the building—essential because heavy downtown traffic necessitated keeping the crane off the street.

Immediate, Positive Response to the slightest lever or pedal movement was provided by smooth hydraulic controls . . . extremely important in positioning of the Saxe clips where "minute" movement was necessary.

Positive Control of the Load—with power raising and lowering of the boom independently of other work motions—permitted the operator to hoist the load while raising or lowering the boom.

Steadiness and Stability under maximum loads enabled Arthur Phillips and Company to make 7-ton lifts at far-out reaches. It was done accurately and precisely with no waste time juggling for position.

For complete information on this job, write for Case History 103 or contact your P&H dealer for detailed facts on the complete line of P&H power cranes and shovels.

HARNISCHFEGER

Milwaukee 46, Wisconsin

P&H CONSTRUCTION & MINING DIVISION

REALLY SHARP ON TURNS

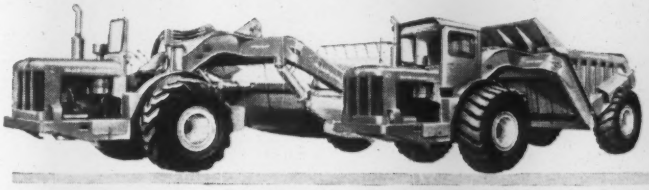
The all-hydraulic, 20-ton capacity TR-260 makes U turns in less than 26½ ft . . . saves up to 15 seconds per cycle over conventional haulers.

The 230-hp Allis-Chalmers TR-260 turns in less space than any wagon of comparable size. Complete U turns are made in less than 26½ ft. All-hydraulic, 2-stage steering with double-acting steering jacks gives you 2-way power pulling out of full turns. At the shovel and hopper, this kind of turning can save you up to 15 seconds per cycle over conventional haulers.

In addition, the sharp-turning TR-260 also gives you the benefits of KON-TORK *differential* and *plenty of tractor and wagon underclearance* to keep you on-the-go.

These are just a few reasons why the 20-ton capacity TR-260 brings you extra profits on your hauling jobs. Your Allis-Chalmers dealer will give you all the facts on both the TR-260 and the 12-ton capacity TR-160. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

You get double value and lower basic equipment investment when you use the 9.5-cu-yd TS-160 and 17-cu-yd TS-260, the 12-ton TR-160 and 20-ton TR-260 units. Both can be interchanged . . . together they eliminate need for specialized equipment.



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power for a growing world

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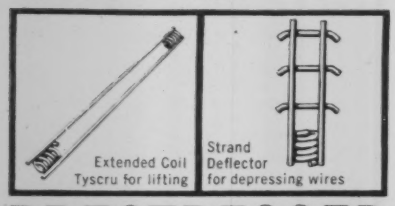

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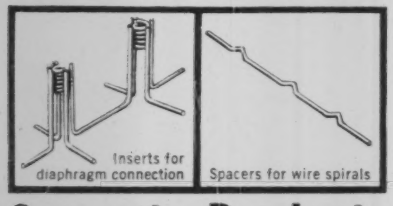
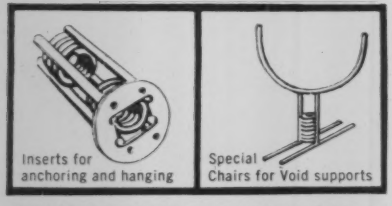


Concrete Products



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These products have been designed and engineered, with the know-how gained thru 50 years of experience, to meet the needs of new, improved techniques in strand deflection, void support, lifting of and anchoring to prestressed members.

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A McGraw-Hill Publication • 330 West 42nd Street, New York 36, N.Y. • LOngacre 4-3000

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ENGINEERING NEWS-RECORD, Vol. 166, No. 2, January 12, 1961

Published weekly by McGraw-Hill Publishing Company, James H. McGraw (1860-1948), Founder. Printed at Albany 1, N. Y. See panel below for directions regarding subscriptions or change in address. **Executive, Editorial, Advertising and Circulation Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** OFFICERS OF THE PUBLICATIONS DIVISION: Nelson L. Bond, President; Shelton Fisher, Wallace F. Traendly, Senior Vice Presidents; John R. Callaham, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator. OFFICERS OF THE CORPORATION: Donald C. McGraw, President; Joseph A. Gerardi, Hugh J. Kelly, Harry L. Waddell, Executive Vice Presidents; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary. **Subscriptions are solicited only from persons with identifiable commercial or professional interests in construction and building. Position and company connection must be indicated on subscription orders. Publisher reserves the right to refuse unqualified subscription.** United States subscription rate for individuals in the field of this publication $6.00 per year, single copies 50 cents; foreign $20 per year, payable in advance. Second-Class mail postage paid at Albany, N. Y. Printed in U.S.A. Title registered in U.S. Patent Office.

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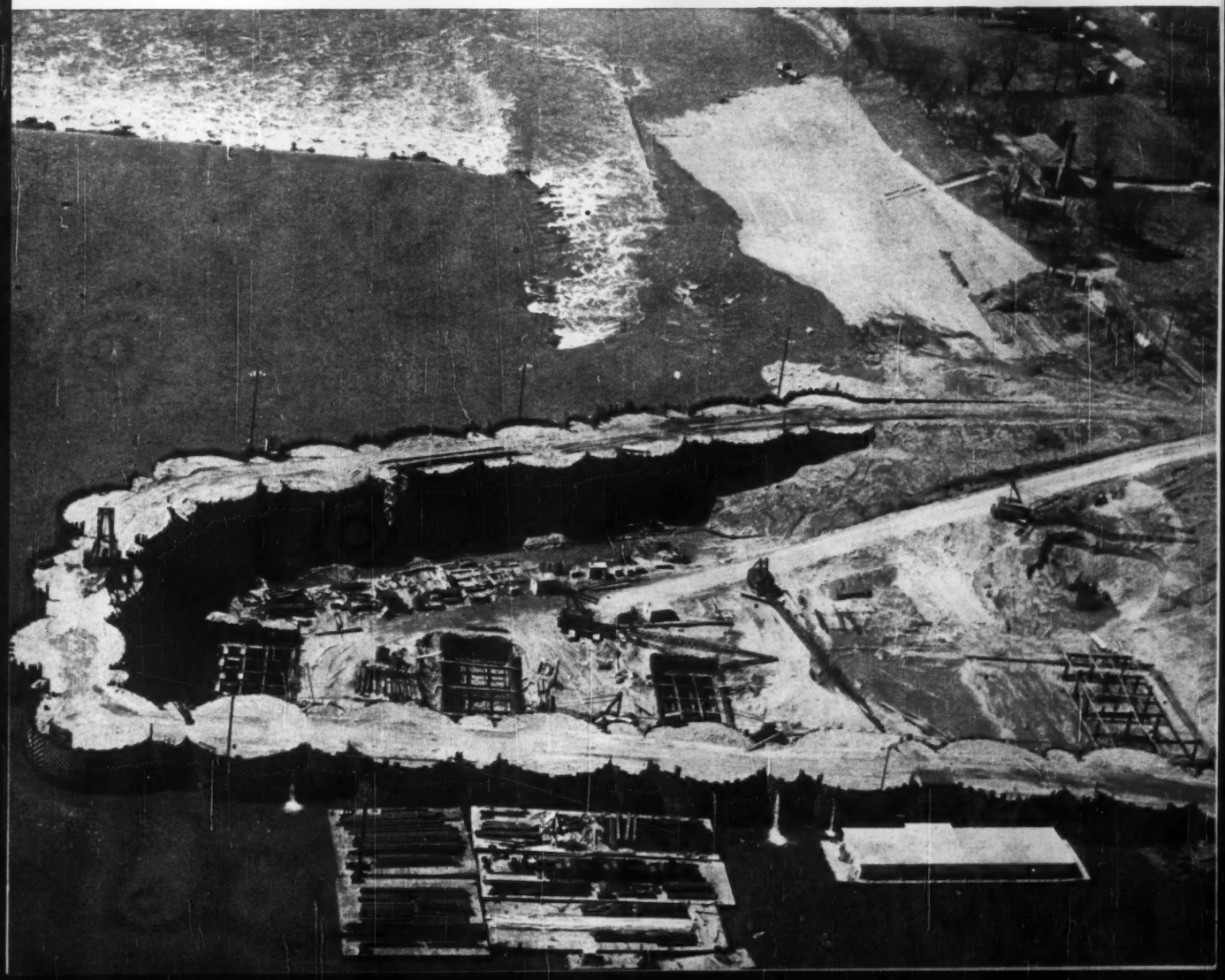


NEW ML-309 LOADER IS 'WAY OUT FRONT

ML-309 Moto-Loader—18,000 lb. lift capacity, equipped with 3 cu. yd. bucket.

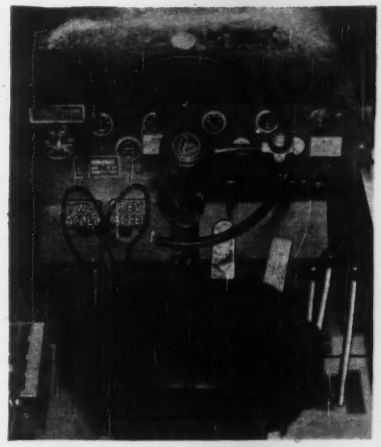
New Moto-Loader has greater reach . . . greater dump height than any machine in its class

Maximum dump height of 10′ and a forward reach at maximum dump height of 3′6″ puts the new Lorain ML-309 'way out front of all the other loaders in its class, in these important ranges. And, it is here, where the work is done, that the "309" pays off, lets you load the biggest, highest trucks fast and efficiently for maximum profit.

The "309" is 'way out front too in Lorain's 3-way balance—of power, weight, and control—for smooth, fast cycles. And it's 'way out front in a long list of design and construction features that owner and operator alike recognize as making it easier for them to get the job done.

See your Lorain Moto-Loader distributor for all the facts and an on-the-job demonstration. Then the "309" will be 'way out front with you too.

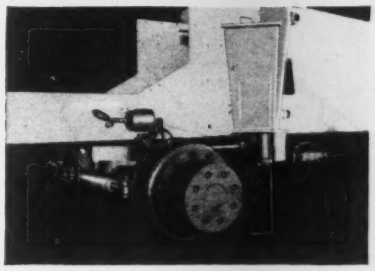
'WAY OUT FRONT IN CONTROLS—"No-hands" direction control frees operator's hands at all times for steering and other operations. Operator just moves his left foot from one to the other of two adjacent pedals to move the ML-309 forward or backward and to control speed of travel.



'WAY OUT FRONT IN SAFETY—New "safety" arms give operator better all-round vision at all times . . . protect him against hazardous "scissors" action. The exclusive "S" shaped arms absorb digging shocks and deflections, provide maximum ranges.

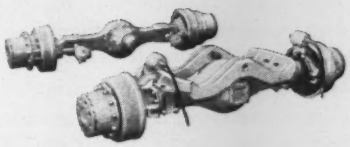
'WAY OUT FRONT IN BUCKET ACTION—New bucket design assures full loads even in the back corners. The load crown is near the center for dribble-free carrying. Bucket is made of heavy Cor-Ten steel, with a long, extra thick, wrap-around lip with a double cutting edge.

'WAY OUT FRONT WITH 4-SPEED MOTO-MATIC—Quick shifting at full power . . . starting and accelerating heavy loads—it's easy with the "309's" torque converter and 4-speed, full power shift Moto-Matic transmission. Automatic de-clutch permits "inching" the load.

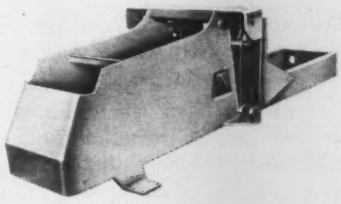


'WAY OUT FRONT IN EASY STEERING—Power steering means easier maneuvering . . . less tiresome, time-consuming jockeying. Twin hydraulic power booster cylinders give smoother control, better roadability at high speeds. Automatic, stand-by mechanical steering controls are also provided.

'WAY OUT FRONT IN TRACTION—High traction differential axles deliver 4-wheel planetary drive. Steering rear axle is saddle-mounted for 23° of vertical articulation, assures positive traction. For highway travel, this axle may be de-clutched for 2-wheel drive.



'WAY OUT FRONT IN STRENGTH—Heavy-duty one-piece frame withstands impact shocks, stresses and strains. This rugged one-piece weldment of heavy steel plate holds all machine components in alignment. The most rugged going can't deflect, twist or knock out the ML-309.



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One more "plus": You can rent your piling from Foster and avoid the usual capital tie-up.

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Reader Comment

Fertilizer Not Explosive—But

SIR—We have read with interest your article titled "Blasters Dig a Spillway With Fertilizer" (ENR Nov. 24, 1960, p. 44). We desire to be helpful in giving you up-to-date information on fertilizer grade ammonium nitrate.

Fertilizer grade ammonium nitrate should not be confused with blasting agents containing ammonium nitrate as one of several components. Most of the new blasting agents in use today are mixtures of ammonium nitrate with combustible materials. They are not, and should not be referred to as, ammonium nitrate fertilizer.

Fertilizer grade ammonium nitrate is an oxidizing material and can support combustion if involved in a fire with combustible materials. With simple precautions, it is stored safely at the plant, in the distributor's warehouse or on the farm. It deserves common-sense treatment during transportation, storage and use. A complete review of the experience in handling millions of tons of the material by rail, truck and ship and in warehousing has demonstrated that the product can be handled with complete safety if the simple and reasonable precautions recommended are observed.

We are anxious, in the best interests of farmers, agriculture and the fertilizer industry to establish the scientific, proven fact that fertilizer grade ammonium nitrate is not an explosive. Of course, we are not unmindful that there is confusion with regard to ammonium nitrate, undoubtedly stemming from the fact that it is being used as an ingredient in blasting agents. However, it must be remembered that this use involves mixing ammonium nitrate with some carbonaceous material such as fuel oil, adding a booster (usually dynamite) and finally an initiator.

LOUIS H. WILSON
Secretary
National Plant Food Institute
Washington, D. C.

Editor's Note: The ammonium nitrate used at Lewis Smith Dam was uncoated and of a type and trade mark sold mainly as fertilizer. It comprised over 90% of the explosive mixture. The rest of the mixture was simply fuel oil—a gallon mixed into each 80-lb bag of ammonium nitrate before pouring into the blast hole. The mixture was set off with detonating fuse—no dynamite boosters.

The National Plant Food Institute's aim of establishing that fertilizer grade ammonium nitrate alone is not an explosive is no doubt commendable and important, particularly in the interests of the groups Mr. Wilson names—farmers and the fertilizer industry. It is equally important to the construction industry not to obscure the fact that the material can easily be converted on the job into a low-cost explosive.

Do Project Managers Manage?

SIR—I read with much interest your editorial entitled "Cost Reduction" (ENR Dec. 8, 1960, p. 100). I would like to add my opinion as to why the Industrial Engineering approach is not used more on construction projects.

It is my opinion, after 30 years in the construction business, the past ten in construction management, that most contractors do not really want construction managers.

The contractors state they want the best man available, years experience, etc., etc., but are unwilling to pay the salary requirements of such a man. Then when they do hire a project manager they are unwilling to give him complete authority to run the job but seek to retain control, usually from the main office, often located in some other city. The usual method is to hire a project manager then hire a superintendent who feels he is not responsible to the project manager, which results in the manager's inability to get any real program in operation.

It is my belief that what most contractors are looking for in a manager is a combination "con" artist and politician with a construction background, who is supposed to keep the owner and the architect-engineer happy, while the superintendent attempts to construct the project by trial and error.

GEORGE W. MOONEY
Bellevue, Neb.

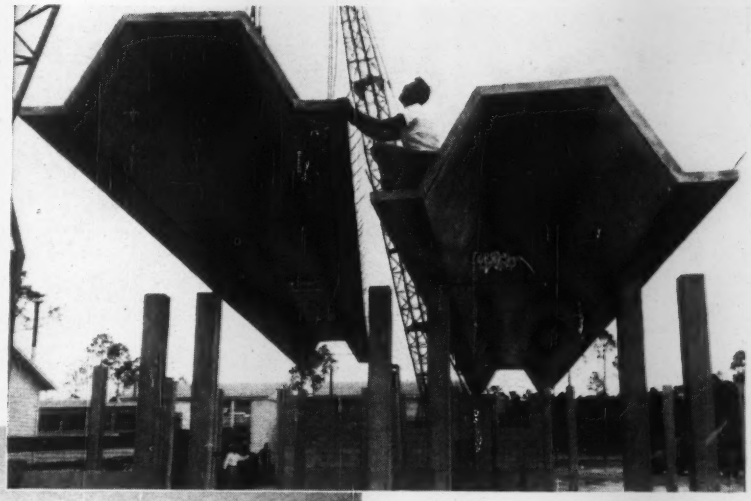
Timber, Too

SIR—Your December 1 report—New Plants for New Products—was especially timely because of the bright outlook for industrial building construction in the Sixties. However, you inadvertently left wood out of your report on General Trends in Industrial Building Design, which begins on p. 50. The numerous articles ENR has published in the past on engineered timber construction indicate your awareness of the importance of this material.

I especially disagree with the statement of p. 51 that long spans tend to favor other types of structural materials. Wood is not only available in

(*Reader Comment continued p. 11*)

Concrete folded plates in new Florida school



Folded concrete plates were tied to precast columns by welded connections. Cast-in-place concrete between plates made a continuous rigid roof. Columns were anchored to foundations by bolted connections.

There are 90 folded plates. Each is 72′ long 9′ wide and 3″ thick. Depth of plate is 34″. There are 116 precast columns. Each is 9½″ x 9½″ x 11′-0″. The total roof area is approximately 60,000 sq. ft. covering 40 classrooms and additional special rooms.

. . . FUNCTIONAL, ECONOMICAL, APPEALING

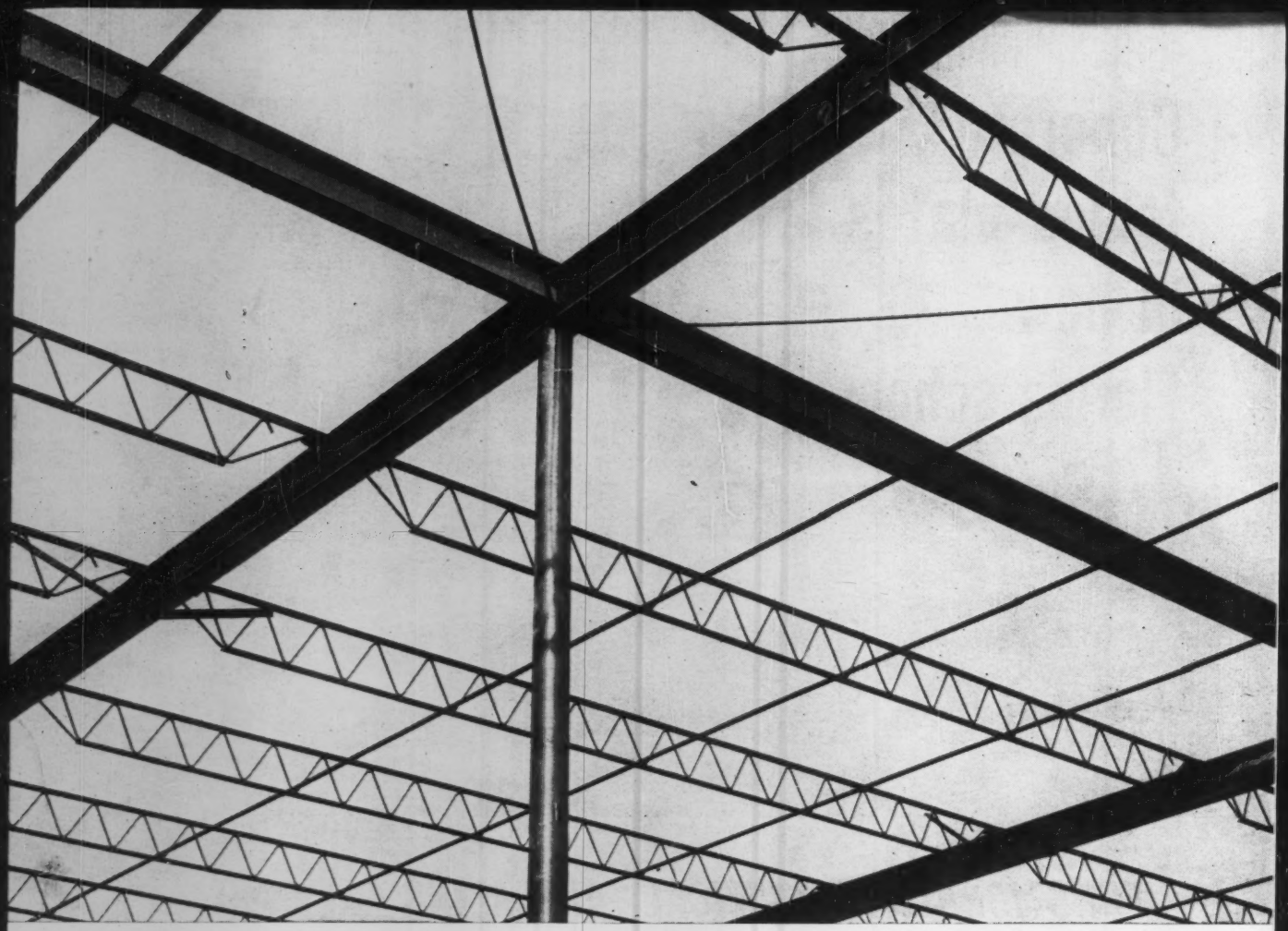
Precast concrete folded plates gave the State of Florida something new in school construction. The simplicity of this pleasing geometric concrete design made it possible to complete the project in the 10 months allowed and to stay within the school district budget. The result is a sturdy fireproof structure for some 600 pupils, that will require little or no maintenance.

In the manufacture of the precast folded plates and supporting columns, Concrete Structures, Inc. used Lehigh Early Strength Cement for maximum production efficiency. Units were removed and forms were ready for reuse in less than half the time required with normal cement.

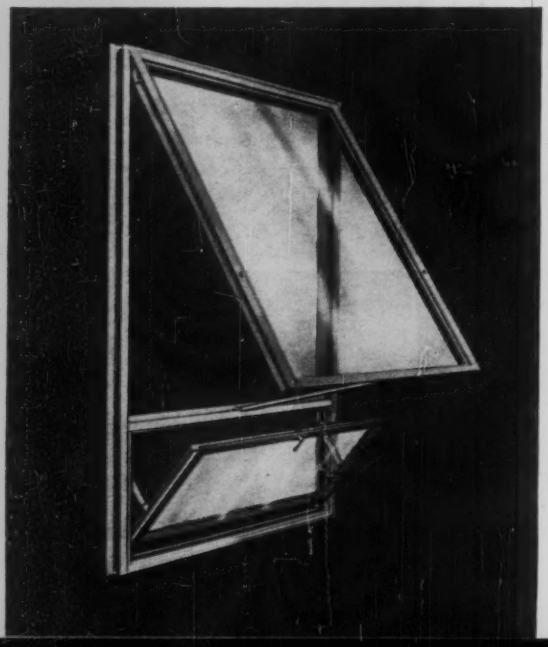
For modern concrete construction, either precast or cast-in-place, chances are Lehigh Early Strength Cement can save you time and money. Lehigh Portland Cement Company, Allentown, Pa.

Owner: Dade County Board of Public Instruction
Architects: Robert B. Browne
George F. Reed, Associate
Design Engineer: Walter C. Harry
Consulting Engineer: H. J. Ross Associates
Contractor: Stobs Brothers Construction Co.
All of Miami, Florida
Precast Concrete: Concrete Structures, Inc., North Miami, Florida

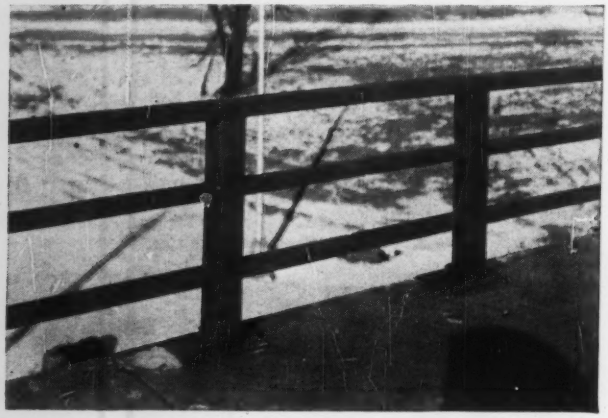
LEHIGH CEMENTS



TRUSCON ALUMINUM TOP-HUNG INSWING WINDOWS, Series 900-TH, are specifically designed for use in multi-storied air conditioned buildings. Double vinyl weatherstripping around entire perimeter assures tight seal to hold controlled air in, keep weather out. Window swings in from concealed hinges at the top. Both sides of the glass may be washed from the inside. Highest quality construction. Clean, smooth appearance, lasting beauty. Available in a wide range of sizes. Write for specifications and data.



REPUBLIC ELECTRUNITE TUBING, rounds, squares, rectangles, are a building material with unlimited freedom in structural design. Beautiful and functional. Greater strength, less weight, easy to handle. Smooth, unbroken surfaces resist moisture and corrosion. No sharp corners or bare edges. Easy to join with other structural members. To learn more about the cost-saving advantages of ELECTRUNITE Tubing, send coupon below.



TRUSCON "OPEN-TRUSS" STEEL JOIST
in new long lengths reduces building costs

Stronger, lighter, longer . . . Truscon "O-T" (Open Truss) Steel Joists support heavy loads over wider unsupported spans. Rigid, fire-resistant, lightweight construction with predictable, dependable, certified load-bearing—at no extra cost!

Truscon "O-T" Series "S" (shortspan) Steel Joist meets the requirements of modern architecture, designed to 20,000 psi working stress. Balance design—in balance with all other structural elements. *Certified* exceeding the rigid standards of the Steel Joist Institute, Quality Verification Program. Further assurance of predictable, dependable, load-bearing.

Straight bottom chord carries to spandrels and columns. Economically extended ends. Good stability in both directions. Available in the longer 40- to 48-foot range. Sizes increased from 17 to 25.

Truscon "O-T" Steel Joists are carefully produced in one of the industry's newest and largest fabricating plants, backed by 50 years of building products engineering and manufacturing experience.

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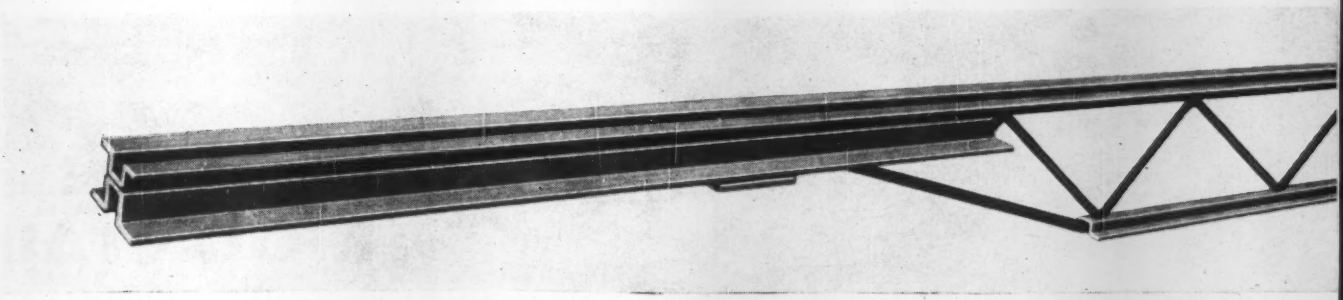

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. . . Reader Comment

long spans, but is efficient and competitively priced. Laminated wood beams, for instance, have been used in spans over 100 ft, and trusses and arches in spans well over 200 ft.

While I could go on and on ad infinitum, expounding on the virtues of engineered wood construction, I think you'll agree there are sufficient reasons for including wood in any discourse on industrial building construction.

CHARLES W. MASTERMAN
Rilco Laminated Products, Inc.
St. Paul, Minn.

Credits . . .

SIR: We enjoyed very much your special report on "New Plants For New Products" (ENR Dec. 1, 1960, p. 50).

May we point out that the credits for the Environmental Test Laboratory built for the Aeronutronic Division of the Ford Motor Company are in error. This building was designed by Daniel, Mann, Johnson, & Mendenhall and W. L. Pereira & Associates, and the general contractor was the Metcalf Construction Co.

On the five more recent buildings on the site, totalling 396,000 sq. ft., and costing $8,500,000, Daniel, Mann, Johnson, & Mendenhall were the sole Architect-Engineers.

S. KENNETH JOHNSON
Daniel, Mann, Johnson, & Mendenhall
Los Angeles, California

. . . and Gremlins

SIR—The Dec. 1 issue on Industrial Buildings was an excellent edition. However, we would like to point out one typographical "gremlin" which crept into page 78.

When you discussed the plastic pop out windows at the Parke-Davis Holland, Mich. lab, you stated they are "designed to pop out at a pressure of 6 to 7 psi." The pressure is 6 to 7 in. of water, or .0875 to .131 psi., which figures to approximately 20 to 30 lb psf.

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"Best rigs for my money—they're doing an excellent job," says R. E. Robertson, superintendent of excavation for Montag-Halvorson-McLaughlin & Associates on the John Day Lock and Dam project near The Dalles, Oregon. He's talking about his seven DW20Gs with Athey PW20 Wagons, carrying 112,000 lb. shot rock or glacial gravel. Five of the DW20Gs stockpiled 100,000 cu. yd. in three weeks. Day after day they make 185 three-mile round trips, pulling big loads at 32 MPH. Says Master Mechanic Huey Long, "These DW20Gs are built to stay on the job."

"These DW20Gs are really hauling sons-o-guns. We've got over 600 hours (in just two months) on them and they're doing great. And this SynchroTouch is undoubtedly the coming thing—only it's here now." This is the way R. A. Heintz describes the five DW20Gs with 482B Scrapers on Heintz & Rogers' railroad relocation project around Ice Harbor Lock and Dam in Walla Walla County, Washington. The tractor-scrapers handle both belt-loading and push-loading tasks. The versatility of these tractor-scrapers has been augmented by sideboarding for easier top loading. Hauling 25 yards of bank run gravel, the DW20Gs move 240 loads every eight hours, cycling in four minutes on the ¾-mile haul.

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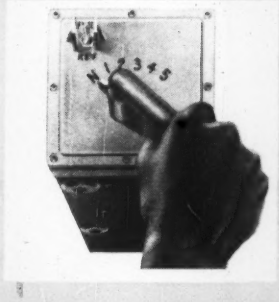

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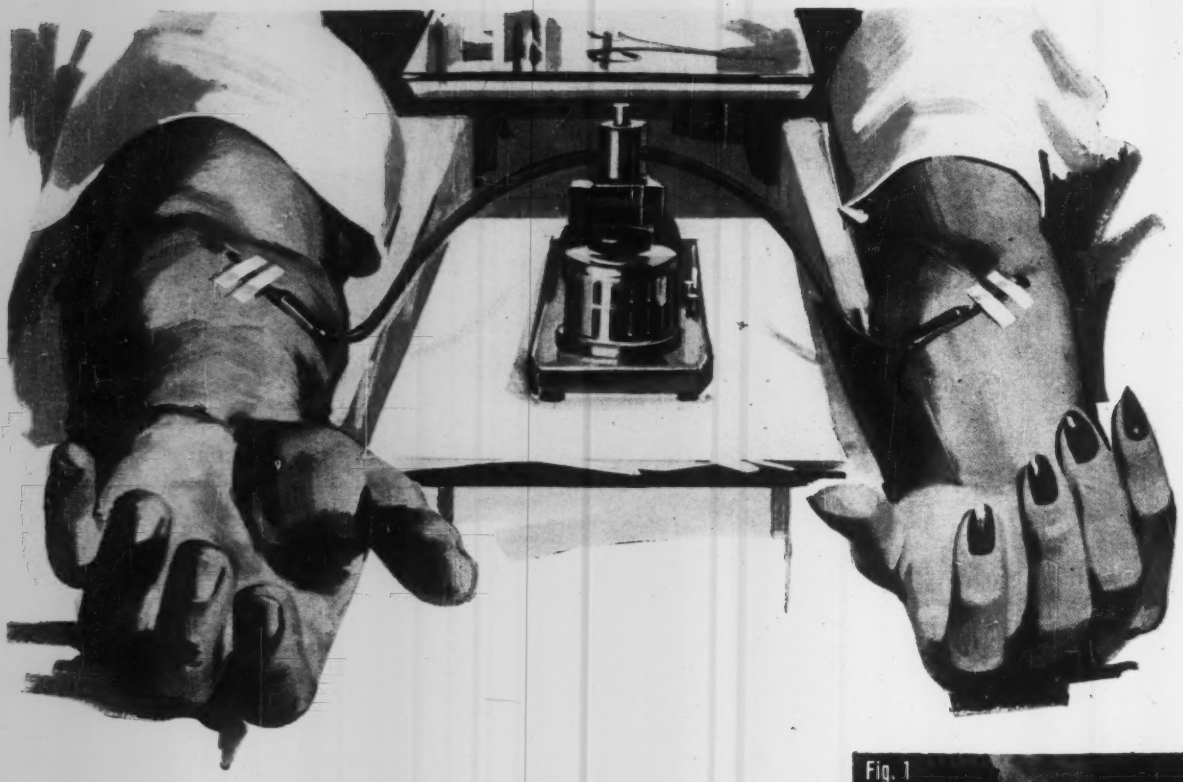

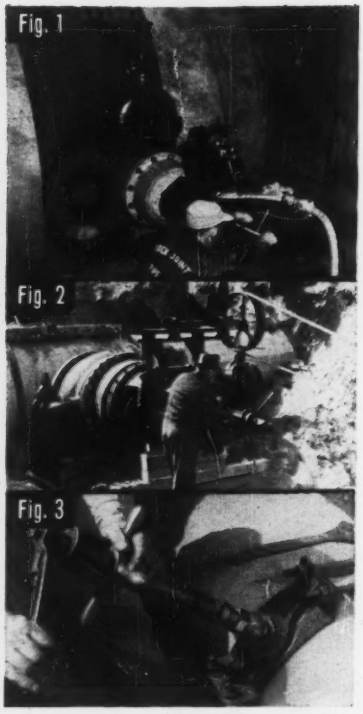

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ENGINEERING NEWS-RECORD

Vol. 166, No. 2 January 12, 1961

Number of copies printed in this issue 86,833

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THE CONSTRUCTION WEEK

PSYCHONUCLEAR SETBACK—The Atomic Energy Commission feels sure last week's reactor blowup was chemical, not nuclear. But whether the public will buy that and relax, assuming proof is forthcoming, is a question bothering officials both in the AEC and in companies big in the nuclear power field, like General Electric and Westinghouse. At the least, it could generate more opposition of the kind that has landed the Power Reactor Development Co. before the Supreme Court in the firm's attempt to build a $44-million experimental reactor near Monroe, Mich. (ENR Nov. 24, 1960, p. 84).

WHAT A MORTGAGE—An unnamed pension fund will provide a mortgage loan of up to $70 million for the $100-million, 59-story Pan Am Building (born Grand Central City) in New York City. Erwin S. Wolfson and Jack Cotton, the investment builders, also report that six New York City banks will provide the $65-million construction loan.

PIERCING THE PYRENEES—Spain is trying to convince France that the two countries should link themselves by a 1½-mile tunnel through the Pyrenees between Benasque and Luchon. A tube through the 6,695-ft Pic de la Grele would reduce automobile distance between the two towns from 100 miles to 17.

STEEL FABRICATORS INDICTED—Seven structural steel fabricators have been indicted by a federal grand jury in St. Louis on charges of bid-rigging and market-allocating. Companies named are Stupp Bros. Bridge & Iron Co., and Wilmar Steel Products Co., St. Louis; St. Joseph Structural Steel Co., St. Joseph, Mo.; Kansas City Structural Steel Co., and Havens Structural Steel Co., Kansas City, Mo.; Missouri Valley Steel, Inc., Leavenworth, Kan.; and A. J. Industries, Inc., Los Angeles.

COLUMBIA TREATY DRAFTED—U.S. and Canadian negotiators have rushed through a draft treaty on joint development of the Columbia River so the Eisenhower Administration can approve it before leaving office January 20. If both countries approve quickly, work can start this year. Hydro construction involved totals close to a billion dollars—U.S. $453 million, Canada $450 million—during the first 10 years, with more later (ENR Oct. 27, 1960, p. 21).

A36 FOR WELDING—Among the revisions to be considered for specification A36 for structural steel is inclusion of an intent to use it for welding. Request for this revision comes from the American Welding Society, which will revise its bridge spec to accept A36 as weldable. A subcommittee of the American Society for Testing Materials will consider later this month the revisions in the spec introduced last year (ENR Aug. 4, 1960, p. 24).

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WASHINGTON OBSERVER

- **Democrats spending plans detailed**
- **Mashburn misses; Dominy to stay**
- **Curtain down on Dixon-Yates**

● **Kennedy task forces are steaming into port laden with spending proposals aimed at carrying out Democratic campaign pledges.** The most important of these so far is an economic report by Professor Paul A. Samuelson of MIT. It calls for increases in "useful" public works spending as an anti-recession measure and, should the recession deepen, it holds out the prospect of a temporary tax cut (see p. 60). President-elect Kennedy is studying another report recommending big increases in federal aid for housing and urban renewal (see p. 61).

A third task force report covers education. It calls for over $9 billion in loans and grants over the next four years. Most of this would go for construction. Although the report would earmark some of the money for teacher salaries, Congress is sure to balk at this. Speaker of the House Sam Rayburn, one of the most powerful men in Congress and a strong Kennedy supporter, draws the line there.

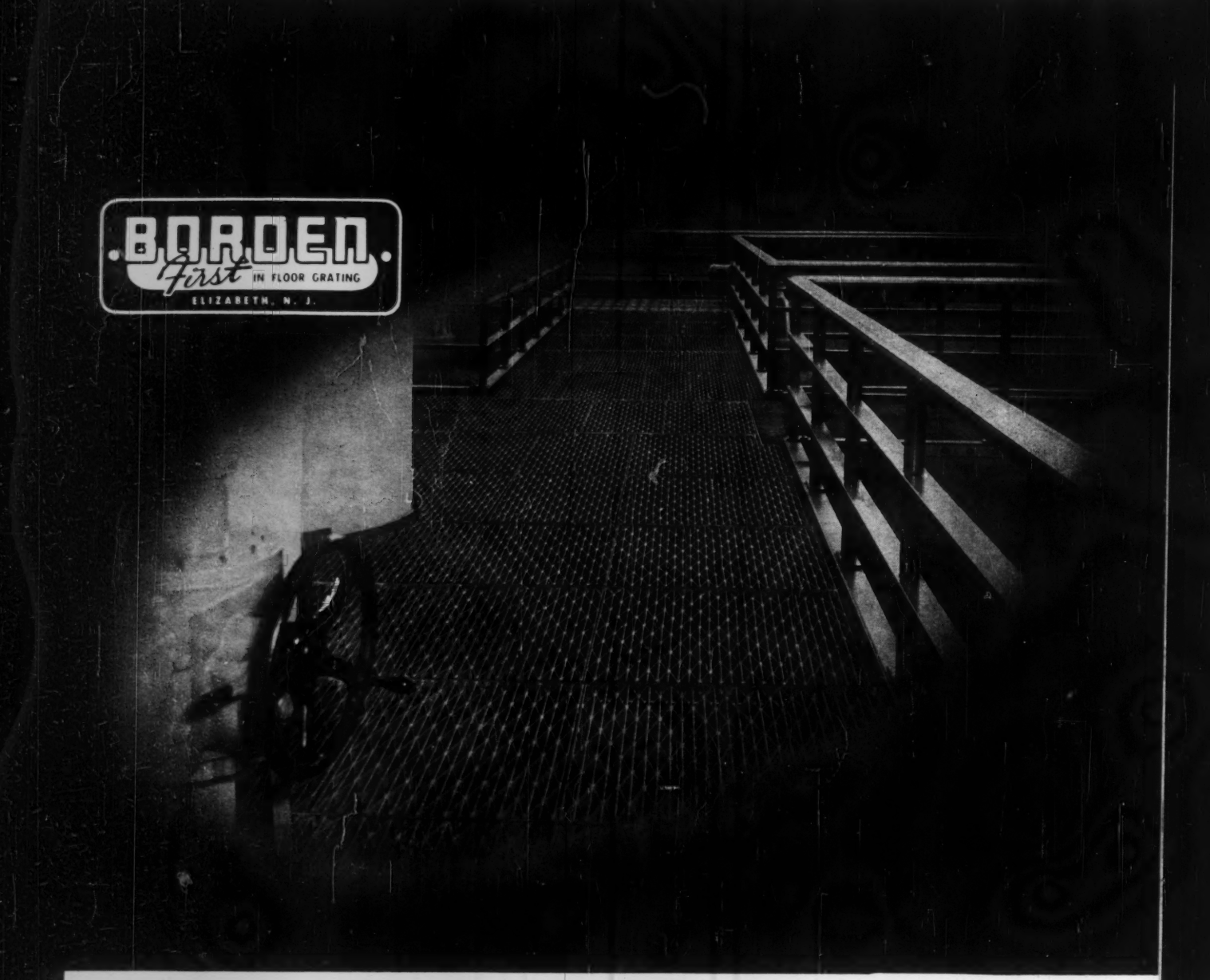
Congress is also likely to aim its hatchet at that portion of the report calling for assistance to colleges and universities for construction of classrooms, laboratories and housing. This college aid would be on a dollar-for-dollar matching basis. Congressional leaders would prefer to limit government aid funds to public education, exclude private institutions.

● **Leaders of the AFL-CIO building trades unions are unhappy over Mr. Kennedy's rejection of lathers' president Lloyd Mashburn for Undersecretary of Labor.** The job went to Chicago Attorney W. Willard Wirtz. Craft union leaders, who had opposed the appointment of Arthur J. Goldberg as Secretary of Labor, hoped to get a more sympathetic hearing on their choice for the second spot in the department. Reason given for turning Mr. Mashburn down: "Too many Republicans in the Administration already."

Another Washington personnel note: Floyd Dominy is likely to stay on as Reclamation Commissioner. The word is he'll keep his post unless there are unusually strong protests from Western Democrats.

● **U. S. Supreme Court wrote the final episode in the Dixon-Yates saga this week.** It decided 6-3 that the government need not pay $1.9 million that the project sponsors claimed they spent in the eight months their contract to build a $100-million power plant near Memphis was in force. The U. S. cancelled the contract in 1955 when Memphis decided to build a plant that could supply the power.

Chief Justice Earl Warren, writing the majority opinion, said the six justices confined their decision to the question of whether an illegal conflict of interest nullified the contract. Conflict of interest was represented, ruled the court, in the dual role of Adolphe H. Wenzell as consultant to the government and as vice president and director of First Boston Corp., an investment house participating in the financing. The court's ruling reverses an earlier award of the claim to the Dixon-Yates sponsors, the Mississippi Valley Generating Co., by the U. S. Court of Claims.



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Another report calls for . . .

A Shakeup in U.S. Transportation

- **A massive report to the Senate outlines a complete reorganization of government agencies in the transportation field.**
- **It's the third major warning in recent months of an approaching crisis—but recommendations are more specific, more radical.**
- **Congress this week also receives BPR's long-awaited highway cost allocation study; report on vehicle weights put off.**

A new warning—the third in three months—has been sounded that the nation is threatened with a transportation crisis and that an overhaul of government policies and regulatory machinery is needed to avert it.

The latest group to call for urgent action is a special task force that has just completed an exhaustive 800-page study of transportation problems for the Senate Commerce Committee. The group, headed by John P. Doyle, retired Air Force general and transportation specialist, spent 18 months on its assignment. The committee will use it as the basis for hearings on whether to revamp the national transportation policy.

Among other things, the Doyle group called for creation of a Cabinet-level Department of Transportation, which would advise the President on over-all policy and administer a number of transportation programs, including highway construction, waterways development and federal help to alleviate urban mass transit problems.

In addition, it recommended establishment of a super regulatory agency to be known as the Federal Transportation Commission. This 15-member agency would replace the present Interstate Commerce Commission, Civil Aeronautics Board and Maritime Board. It would handle the fixing of rates, the granting of operating rights and other types of economic regulation of railroads, truck lines, airlines, inland and ocean shipping. It would be responsible to Congress.

The Department of Transportation, and Federal Transportation Commission would pull together at three central points—government planning, policy-making and regulation—in the field of transportation.

At present, government policies are uncoordinated and often conflicting because they are fragmented among so many agencies. This has led, the Doyle group said, to a "growing overcapacity and underutilization" of the nation's transport facilities.

As a result, regulated carriers of both freight and passengers find themselves handicapped in many instances by overcompetition, sharply declining net profits and inability to replace outmoded equipment. Unless this trend is reversed, the task force said, the nation will be hit by a "major transportation crisis" which could, over the next 15 years, plunge the regulated carriers into such financial distress that they could survive only by a substantial government subsidy.

Similar warnings were sounded recently by a transport study conference sponsored by the National Academy of Sciences (ENR, Nov. 24, 1960, p. 21) and by James M. Landis, adviser to President-elect John F. Kennedy on regulatory agencies (ENR Jan. 5, p. 19).

The National Academy conference also advised the government to adopt a unified transportation policy. The study group suggested that a single agency governing all modes of interstate transportation should be established, instead of letting separate and, sometimes, conflicting policies develop among a group of separate organizations.

Mr. Landis has since been instructed to draw up a legislative program for the reform of all regulatory commissions. He differs with the recommendations of the Doyle group in that he is not an advocate of a Cabinet-level Department of Transportation or creation of a super regulatory agency. Mr. Landis would continue the present system of separate regulatory agencies but streamline their operations and coordinate their planning functions under a new White House official, who would be the President's chief adviser on transportation matters.

The mammoth Doyle report provided priority reading for transportation specialists in both Congress and the executive branch while they awaited another major report—the Bureau of Public Roads' highway cost allocation study. This report will inform Congress what benefits derive from the multi-billion-dollar Interstate highway program. It will play a major role in Congress' decision on whether to shift some of the burden of taxes for paying for it to non-users.

The report was to have reached Congress on January 3, the opening day of the new session, but BPR did not have it ready until the last minute and then the Department of Commerce insisted on some revisions and editorial changes. It was being readied for submission to Congress this week.

Another BPR report dealing with the highway program reached Congress on schedule but proved to be of little significance.

It was to have contained BPR's final recommendations on the maximum weights and dimensions of heavy vehicles to be allowed on the Interstate system. But the bureau told Congress its decision will have to be delayed until mid-summer, when results of the Ottawa, Ill., road test conducted by the American Association of State Highway Officials have been analyzed. First stage of the AASHO test did not end until late November.

The Doyle report had a number of specific recommendations to Congress on the highway program—on its administration, on the weight and size issue, and on financing.

In recommending that BPR be

shifted from the Department of Commerce to the new Department of Transportation, the task force said there is a great need for coordinating highway planning with over-all transportation developments.

For example, it said, an estimated 60,000 miles of rail lines are uneconomical and should be abandoned. Yet highway administrators are going ahead with plans for costly bridges and underpasses for some of these lines. The group acknowledged it had no precise statistics in this regard, but it said there should be high-level coordination among government, railroad interests and highway planners on the problem.

It also called for more coordinated planning between cities struggling with mass transit problems and highway officials.

As for financing, the Doyle group said these steps should be taken:

- Whatever "extras" are required for the highway program because of purely defense or other federal needs should be paid for out of the general treasury and not charged against the Highway Trust Fund. Specifically, the cost of meeting the Defense Department's demand for 16-ft rather than 14-ft bridge clearances should be assessed against the defense budget.
- Government vehicles that operate on the highway system, including postal trucks, should have to pay federal gasoline and other excise taxes. They are now exempt.
- Most highway-user taxes are now going into the Highway Trust Fund but some are diverted into the general treasury. This diversion should be halted.
- Taxes on fuel for aviation and recreation navigation, which now go into the Highway Trust Fund, should be withdrawn. The Doyle group said this money should be put into newly created airways and waterways trust funds. These funds would be used solely for financing aviation and navigation facilities.

In this connection, the group called for the imposition of new airways and waterways user charges. Aside from fuel taxes, these would include registration fees on planes and boats, excise taxes on equipment and gross weight levies. All of the money would go into the new trust funds.

As for allowable truck weights, the group said that if BPR calls for an increase in the present AASHO-recommended maximums of 18,000 lb per single axle and 32,000 lb. for tandem axles, Congress should defer adoption of the suggested maximums. It said this should be done until legislative action can be taken to insure that heavy trucks not only pay an equitable share of the costs of new highway construction but also share in the cost of improving existing highways affected by the higher loadings.

If BPR recommends retaining the existing maximums, the report said, these should be put into effect federally regardless of any state laws that might permit heavier loads. Then one of two alternatives should be followed: (1) Loadings in excess of the maximums should be allowed for a five-year transition period until the useful life of existing oversized vehicles has been reduced; or (2) the federal maximums should go into effect immediately and consideration given to allowing accelerated amortization on the oversized vehicles.

The Doyle group also would give the new Department of Transportation wide executive control over waterways and airways development. The department would absorb the existing Federal Aviation Agency, the St. Lawrence Seaway Development Corp. and the Panama Canal Co. In addition, it would take over those planning and administrative tasks of the Corps of Engineers and Tennessee Valley Authority that relate to navigation on waterways. And the decision within the executive branch as to whether navigation projects are justified would rest with the department.

The Doyle group was highly critical of the government for allowing local pressure groups to force it into providing navigation projects when railroads and other forms of transportation provide adequate service. It singled out the navigation portion of the Arkansas River Project as an example. It said there is no evidence that the area lacks now, has lacked or will lack adequate transportation without the navigation project. Yet, it said, the over-all annual amortization and maintenance cost of the project will twice exceed the $20 million appropriated annually to the Interstate Commerce Commission for nationwide regulation of railroads and truck lines.

Other Doyle group recommendations:

- A government campaign to force reluctant railroads to merge into regional railroads.
- Direct federal loans for capital improvement of railroad commuter services.
- A federal law to exempt railroads and pipelines from state property taxes.

Depressed Areas Bill Up Again

The Kennedy Administration is giving top priority to a depressed areas bill that would spur construction of new plant facilities and public works.

Sen. Paul Douglas (D., Ill.), who headed a Kennedy task force on area redevelopment, introduced the bill as S. 1. It is essentially the same bill he introduced last year, which was trimmed by the House and vetoed by President Eisenhower. Congressional sources expect it to sail through the Senate but face rougher going in the House.

Senator Douglas proposes a $392-million program, of which only $117 million can be spent during the fiscal year starting July 1. Most of the cost is in loans, which will be self-liquidating.

Industrial and rural areas would each get a revolving fund of $100 million ($30 million the first year) in low-interest loans and grants for development of land and plants for industrial use. This would include development of industrial parks and leveling of land for the sprawling one-story buildings now favored by most industry.

Another $100 million would go as loans for public facilities, and $75 million in grants for public projects—dams, sewers and access roads—required to attract industry. Development programs would be drawn up by local commissions and submitted to the program administrator for approval.

Senator Douglas cites 100 industrial areas of persistent unemployment—average unemployment of at least 6% for several years—that would qualify. Several hundred rural areas would also qualify. House members will attempt to broaden definitions of distressed areas in hopes of garnering more support, but proponents will try to hold it to chronically depressed cities and counties.

Much of the opposition will come from Southerners, even though many southern areas would qualify. They feel that the southern industrial boom, spurred by low labor costs and other attractions, would suffer. Prospective new plants might be lured into New England or Pennsylvania by the prospect of subsidized plants.

The program is aimed at "fringe" depressed areas where only a small spur is needed. A southern Illinois town with good coal supplies and a generally favorable business climate, but with insufficient water, might well qualify, for instance, where a really distressed coal town in rural West Virginia might be considered beyond help. New plants in an attractive commercial town like Wheeling, W. Va., however, could supply jobs to unemployed miners commuting from towns 50 miles way.

Proponents will stress that even though new jobs can not be created, national economic benefits result from utilizing homes, schools, roads or waterworks in an existing community. If the new plant located in an already prosperous area, new homes and schools would have to be built.

After three years and $92 million . . .

Throgs Neck Bridge Opens on the Dot

The two-mile-long Throgs Neck Bridge across the western tip of Long Island Sound opened this week. It provides another vehicular link between New York City's Boroughs of the Bronx and Queens.

The opening coincided with the schedule announced on Oct. 22, 1957 when work on the $92-million, six-lane structure began.

The bridge, by linking Long Island expressways with those in the Bronx, Westchester County and, by way of the George Washington Bridge, with those in New Jersey, will enable through traffic to avoid the most congested areas of New York City. It will also relieve traffic on the parallel Bronx-Whitestone Bridge, which last year carried more than 33 million vehicles, and on the Triborough Bridge, which last year carried more than 46 million vehicles.

The Throgs Neck Bridge has a total length of 13,410 ft. Its suspended span measures 2,910 ft, and is made up of a center span of 1,800 ft and two side spans of 555 ft each.

The remaining length of the structure is made up of 6,400 ft of approach viaducts on the Bronx side and 4,100 ft of approach viaducts on the Queens side. Viaduct spans go to 191 ft in length.

The bridge towers, which rise 360 ft above the water are seated on some 156,000 tons of concrete founded at depths up to 148 ft below the water. Almost 14,000 miles of wire are spun into the two 22⅞-in.-dia main suspension cables of the structure.

The bridge and its approaches were constructed under numerous contracts for the Triborough Bridge and Tunnel Authority. Consulting engineer for the suspended structure was Amman & Whitney of New York City. E. Lionel Pavlo, also of New York City, was consultant on the approaches.

Dulles Airport Opening Put Off

Two unusually severe winters forced postponement of the opening of Dulles International Airport, 27 miles west of Washington, D. C., by an entire year, says Federal Aviation Agency chief Elwood R. Quesada.

The $100-million airport, the first commercial airport to be designed from the ground up for jet airliners, was scheduled for a July 1 opening (ENR Feb. 4, 1960, p. 42). But bad winter conditions a year ago tied up heavy earthmoving equipment for five months and low temperatures this winter have halted concrete placement.

The new completion date is July 1, 1962.

Public opposition to the proposed location of the 17.7-mile limited-access highway between the airport and Washington contributed to the delay. The highway is now only half completed.

The complications of a new design concept for the airport have also added to the scheduling difficulties.

Passengers at Dulles Airport will be ferried between planes and the terminal on air-conditioned, dual-control mobile lounges. The development of the prototype lounge is only 75% complete and a contract for production of the original fleet won't be awarded until the prototype is fully tested and approved.

Construction of the terminal, a two-story reinforced concrete structure with a cable-slung roof, is only 50% done. Contracts for the interior of the terminal haven't been awarded yet.

The airport's three runways, each some two miles in length, are completed. The huge airport servicing apron, 800 ft wide and 4,000 ft long, and its utilities are 85% done.

The FAA will own and operate Dulles for the federal government.

Insulated

A lightweight combination of reinforced, pneumatically applied concrete on foamed-polystyrene wall cores reduced construction and operating costs for a building in California. High insulating value with a thin wall contributed to the design's success.

The patented technique—known as the Insulrib Method—was specified by Golden, Bryant & Jehle, architects-engineers of El Centro, Calif., for the Imperial Valley Health Center in El Centro. The building is a one-story structure covering an area of about 11,000 sq ft. Joseph Golden worked out the system with the late A. Y. Preble, who was senior partner at the York-Imperial Co., air-conditioning contractors.

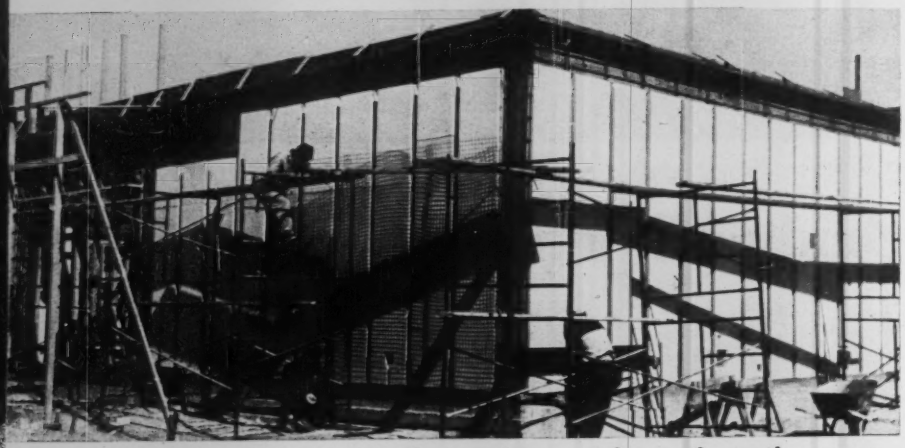
In this new design, foam plastic serves both as concrete forms and as a base for interior plastering, eliminating furring and lath and providing high insulation.

In general, the bulk of the wall consists of the plastic. Concrete sprayed on and between the plastic core units forms structural ribs and a tough exterior face.

Here are main construction steps:

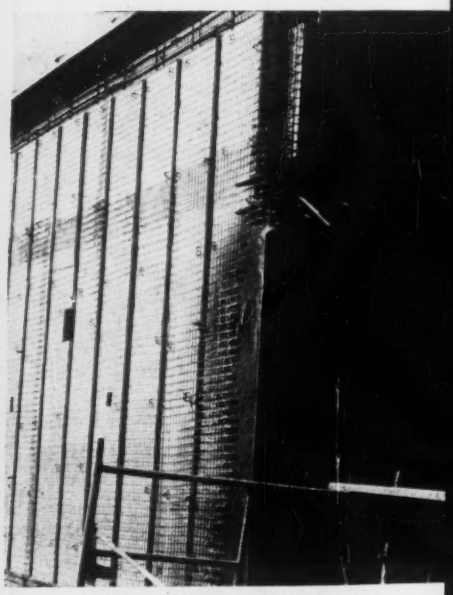
- Carpenters erect falsework. This consists principally of vertical 2 x 6 or larger planks—later used as roof and ceiling joints.
- Teams of workmen toe-nail slabs of plastic foam to the verticals, usually leaving 4-in.-wide spaces between the foam slabs for ribs. Then plumbing

1. Plastic cores for walls are set against falsework.



2. Mesh reinforces 2-in. facing; bars reinforce ribs and corners.

3. Sprayed concrete forms ribs and wall's 2-in. face.



4. Facade gets float finish.

Thin Walls Carry Roof Loads

and electrical trades install pipes and conduit.

• Reinforcing crews set bars in the rib spaces. They also form cages at corners, heads and bottoms of the walls and over doors and windows. Then they apply wire mesh on the exterior face of the core. Anchor bolts for nailer plates are placed atop the wall; for end studs of major interior partitions, they are set in a wall rib.

• Concrete crews build up the exterior face, ribs and reinforced points of the building with pneumatically applied concrete. After 48 hours, carpenters and laborers strip the timber falsework, stacking it until needed for roof framing.

• Concrete crews give the exterior a finish coat, ½ in. thick and with a float finish. After the structure is closed in, plasterers finish the interior with plaster applied directly on the plastic cores.

Several tricks cut construction costs:

• An electric soldering gun with a wire loop element is used to route pipe and conduit chases in the plastic.

• Exterior-wall mesh reinforcing is furred out from the core with bent mesh or wire accessories pushed into the foam plastic.

Typical wall construction is composed of 2 in. of concrete on 4 or 5 in. of core material, plus two plaster coats.

The ribbed wall weighs about 43 lb per sq ft compared with 55 lb for an 8-in. reinforced lightweight masonry wall and 75 lb for a 6-in. reinforced concrete wall.

Load tests run on sample panels of the foamed-plastic-core wall during its development indicate the structural stability of the wall. The panels, typical of the design, were 8 x 10 ft and had 4-in.-thick cores and 2 in. of sprayed concrete. The 4-in.-wide ribs between panels were reinforced with a single No. 5 bar, and the head and foot of each panel were 10-in.-deep concrete sections with two No. 5 bars. Welded mesh, 2 x 2 No. 10, reinforced the concrete face. The panels took 100,000 lb of axial load plus 5,000 lb of lateral load without failure.

The wall design cut mechanical costs, both for installation and operation. The lower California and Arizona climate makes air conditioning a major expense. Temperatures range up to 115F in the shade during summer months. GB & J feel the Insulrib system is particularly adapted to these hot areas because of its high insulating value.

The architects say a 6-in.-thick foam-core wall will transmit only one-seventh the heat of an 8-in. pumice-concrete block wall. Their calculations indicate the 6-in. wall has a U factor (heat-transmission coefficient) of 0.05. (Earlier designs for vermiculite concrete cores yielded a U factor of 0.14; for a 6-in.-thick precast concrete wall, the U factor was 0.79; and for the precast wall with furring, insulation and plaster, it was 0.16.)

The building's roof is wood-framed. At the center, it is supported by a wood-stud bearing wall; at the outside, joists bear on the Insulrib walls.

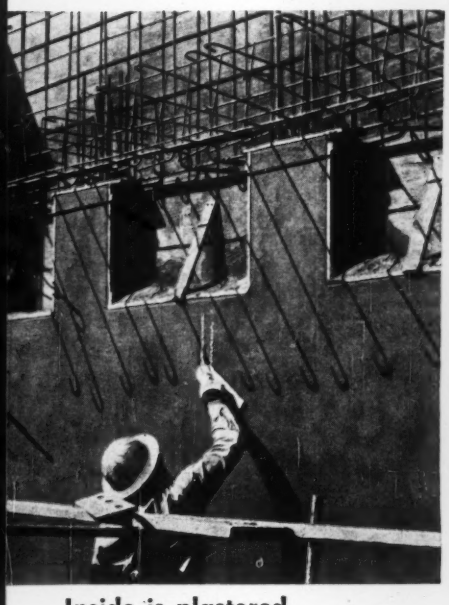
Roof framing consists of roof joists with ceiling joists hung 24 in. below them. Between roof deck and ceiling is room for ducts and conduit. The ceiling is insulated with 6-in.-thick mineral wool batts. The architects calculated the roof and ceiling construction U factor to be about 0.045.

Air-conditioning load for the 10,000-sq-ft Health Center came to 28.3 tons, a reduction of four tons from that required for pumice-block construction. The initial saving in equipment alone came to about $2,800, more than twice the cost of the 12,000 fbm of foamed plastic used in the building. Savings in heating and cooling costs will equal initial cost of the heating-cooling equipment in 20 years.

Total construction cost of the health center was $271,100, including site improvement and utilities. Cost will be shared by the County of Imperial, the state and the federal government. Laboratory equipment and furnishings will be provided separately.

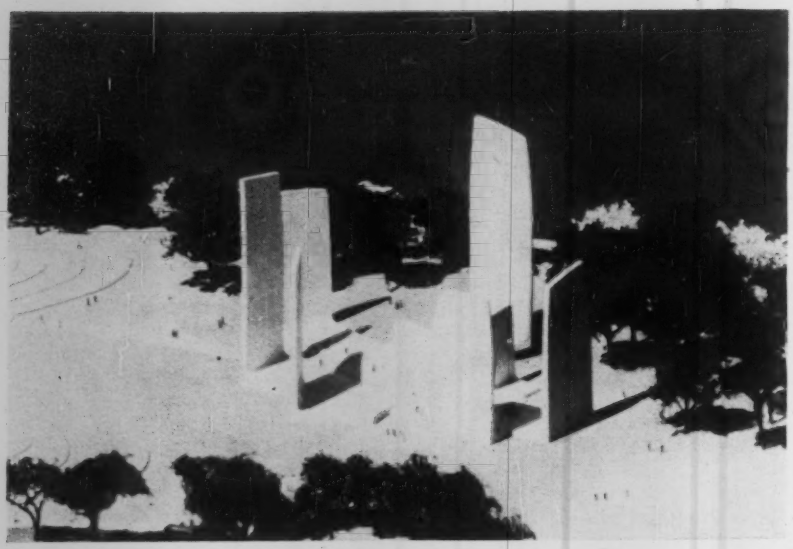
Fred C. Smith, Holtville, Calif., was the general contractor.

Johnson-Western Gunite Co., Gardena, Calif., applied the wall concrete. Dow Chemical Co. supplied the Styrofoam for the wall cores.



Inside is plastered.

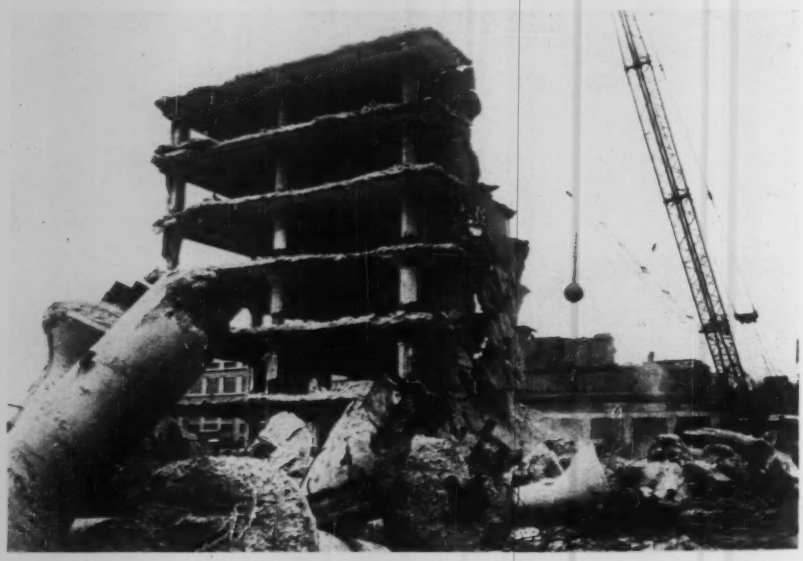
5. Completed center has highly insulated, windowless walls.



Tablets Win FDR Memorial Contest

A modern version of Stonehenge, the ruins of the ancient Druid monument near Salisbury, England, won the $50,000 Franklin D. Roosevelt Memorial competition for architects William F. Pedersen and Bradford S. Tilney of New York City.

Eight concrete tablets, looking like giant random-sized bookends, will be inscribed with quotations from the late President. The tallest will be 165 ft high. The memorial will be located in Washington, D. C., on a site between the Tidal Basin and the Potomac River.



Headache for the Headache Ball

A sturdy Manhattan building may not be an immovable object, but it's still a tough opponent for a 2¾-ton "headache" ball. Crane operators have been smashing the steel ball against the building since last May as part of the site clearance work for Lincoln Center. And they'll probably require another two months to level the six stories remaining from the original 13.

The building has flat-slab floor framing with massive circular concrete columns encasing H-section steel column cores. Originally planned to house auto showrooms, they were designed to support maximum automobile loading at every floor. It had been a federal office building in recent years.

Lew Morris Demolition Co. is the wrecking contractor.

Port Bids Way Too High; Bay Area Plan Restudied

The construction schedule—and possibly the plans—for a $30-million San Francisco port improvement project suffered a heavy setback late last month when the city's Port Authority rejected as too high all five bids submitted for initial work on the proposed 67-acre Army Street Terminal.

Prices quoted for dredging docks and constructing a pier exceeded by several million dollars the engineers' estimates for the work. One bid on what was expected to be less than half the job almost equaled the estimated cost for the entire project. Prices ranged from a low of $17.3 million, submitted by a combine of Raymond International, Utah Construction and Mining Co., and Healy Tibbets Construction Co., to a high of $28.9 million turned in by Charles L. Harney Co. of San Francisco.

According to Cyril Magnin, president of the San Francisco Port Authority, even the low figure was so far above the estimates that a complete revision of plans for the terminal may be in order.

Court Approves Seattle's $108-Million Sewer Plan

The Washington State Supreme Court has removed the last legal barrier to a $108-million sewerage construction program of the Municipality of Metropolitan Seattle. The agency will start work this year and finish it during the next 10 years.

The court unanimously upheld a contract for sewage disposal service between the city of Seattle and the Metropolitan District. Seattle, in a friendly test suit, had challenged the contract as well as the constitutionality of a 1957 state law allowing such a pact and of a 1958 election that formed the Metropolitan District.

Under the contract, the agency will dispose of the sewage collected by the City of Seattle and other municipalities —Kirkland, Bellevue, Renton and several other cities.

In line for immediate construction are a $14-million activated-sludge sewage-treatment plant at Renton (aimed at ending pollution of the Duwamish River), the first section of a trunk sewer along the east shore of Lake Washington to the Renton plant, and Richmond Beach and Carkeek Park sewer systems.

Bids may be called as early as May of this year. Construction starts for the year are expected to amount to about $9 million; for 1962, $27 million.

The 10-year sewerage program was proposed in a study completed in 1958 by the San Francisco consulting firm of Brown & Caldwell (ENR May 29, 1958, p. 24).

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A report on the Koehring Skooper

by W. C. Ratliff
General Superintendent,
Sunniland Lime Rock Company,
Sunniland, Florida

"I'd have bet a hundred dollars the Skooper couldn't do a job for us before seeing it in action. It has, though, and enabled us to increase production from 230 to 350 tons per hour — an increase of 52%.

"We use the Skooper to load lime rock. We excavate this material below water, stockpile it for a month to get the water out, and then run it to a crusher. While drying, the rock has a tendency to set up, and becomes extremely hard to dig. This is where our Skooper has paid off."

Skooper keeps four trucks busy, cuts maintenance

"Before Skooper, we tried crawler-mounted end loaders, but maintenance was too high. We tried rubber-tired loaders, but they just couldn't dig the rock effectively. We then went to a 1 yd. dragline but it was too cumbersome and slow — couldn't keep three trucks moving. With Skooper's 7′ standstill crowding action and full revolving swing, loading exceeds 350 tph. We keep four trucks busy at all times and have time to use the Skooper to keep the haul road clean besides. Average loading time for a 7½ yd. dump truck is 55 seconds"

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Around the Country . . .

• **Building in the Valley**—Disney Marine Co. will build a $60-million, 115-acre business and apartment complex in California's San Fernando Valley. Scheduled to start this year is $30 million worth of work, including a 13-story office building, a hotel and a 5,000-seat auditorium. Later will come department stores and garden apartments. Victor Gruen Associates, Los Angeles, are the architect-engineers.

• **Florida crackdown**—A contractor building a dormitory for the University of Florida has been disqualified from future bidding because he is far behind his required time schedule. The ban will hold for all work under jurisdiction of the State Board of Control until the contractor, William A. Berbusse, Jr., Inc., of New York and Palm Beach, improves his present operations.

• **Jets over Tampa**—The Hillsborough County (Fla.) Aviation Authority will call for bids on a new $1-million jet runway at Tampa International Airport. Initial length of 6,800 ft will be extended to 8,300 ft as traffic demands. The authority ruled out use of MacDill Air Force Base, scheduled for deactivation next year, as a civilian jetport.

• **Big beginning**—Major construction in Philadelphia's $55-million Washington Square East redevelopment project will get under way this month with groundbreaking for the $14-million, 33-story Hopkinson House apartment tower. General contractor is Major Realty Corp. of Rosemont Park. Architect is Stonorov & Haws of Philadelphia; structural engineer is Garfinkel & Marenburg of New York City.

• **Honolulu offices**—Hawaiian Dredging & Construction Co. will build a 25-story, $17-million office building near its present Ala Moana building in Honolulu. Plans show a slender tower on stilts with a deep subshade-panel facade.

• **Penn-v to modernize**—The Pennsylvania Railroad will carry out an "extensive rehabilitation" of its Chatauqua branch between Oil City, Pa., and Buffalo, N. Y., beginning next year. The work will be financed through a $20-million federal grant accompanying the Allegheny River Flood Control Project.

• **Wells Dam**—Douglas County (Wash.) Public Utility District will file an amended application for a license to built $200-million Wells Dam on the Columbia River, now that three utilities have tentatively agreed to share the cost of a $150,000 study by Bechtel Corp. of San Francisco. In return, the utilities will share options on 62% of the 560,000-kw project's power.

• **L. A. acts on rubbish**—A plan to revamp refuse collection and disposal practices along lines recommended by Black & Veatch, Kansas City engineers, has won the approval of the Public Works Committee of the Los Angeles City Council. The engineering report on the $85,000 study has also inspired Los Angeles County to start looking for a firm to undertake a similar study for the county.

• **Meat for construction**—Construction of a $70-million regional food center, which will centralize the New York metropolitan wholesale meat industry, is tentatively scheduled to begin in January. It will be located in Jersey City, N. J.

• **Big money for new town**—A proposed new city in Orange County in southern California, will cost $400 million, according to its Boston planners—Cabot, Cabot & Forbes. Included in the proposal: a downtown shopping center, park sites, and an industrial district. Meanwhile, plans for a $50-million housing development have been filed in Costa Mesa, Calif.

• **Tall building troubles**—Skyscrapers going up along Wilshire Blvd, are cited by Los Angeles Board of Public Works as prime justification for a proposed $55-million sewer bond issue, which it wants placed on the ballot in 1961. The DPW points out that when a building of 10 or 20 floors replaces one-story structures, sewage systems become inadequate.

• **New home for Cardinals**—A huge redevelopment project that would include a double-deck stadium, designed for eventual seating capacity of 70,000, has been approved by the St. Louis Planning Commission. The project would also include several office towers, some parking garages and a motel in a 82-acre area. Cost estimate for the first of two stages of construction is $58 million.

BPR Allots Highway Funds Held Pending Nose Count

The Bureau of Public Roads has parceled out $231,250,000 in highway-aid funds that it withheld from states pending the outcome of the 1960 Census.

The money is for construction of primary, secondary and urban highways (ABC roads) during fiscal year 1962 and is in addition to the $693,750,000 apportioned to the states for these programs last July.

Population is one of the factors involved in allotment of federal highway aid to the states. The $2.2 billion for fiscal 1962 Interstate work was apportioned last summer and is not affected by this division.

Because of results of the census, 27 states got a smaller share of ABC funds and 25 got increases. (The District of Columbia and Puerto Rico are counted as states for apportionment purposes.)

Florida had the largest increase in population and its ABC funds rose from $14.8 for fiscal 1961 to $19.7 million for fiscal 1962. California was second high with a 14% increase in funds and Arizona got 8% more.

The District of Columbia and West Virginia both took 10% cuts in their ABC funds. The decrease in Pennsylvania is 9% and in Massachusetts 8%.

Engineer Groups Ignored On Registration Board Job

Gov. Christopher Del Sesto of Rhode Island has acknowledged that he broke a state law in appointing his brother-in-law to the State Board of Registration of Engineers.

The governor said he appointed Themistocles H. Faraone Jr. to a five-year, unpaid term on the board because he regards as invalid a statute that requires the governor to make such appointments from among persons nominated by professional engineering societies in the state. Faraone was not nominated by anybody, he said.

He said he regarded laws requiring him to make such appointments as invalid "because they delegate the authority of the governor to nongovernmental agencies."

Governor Del Sesto described his actions when queried about a letter sent him by the Rhode Island Society of Professional Engineers.

The society asked what engineering organization had recommended Mr. Faraone under the 1956 law requiring that the five board members "shall be appointed by the governor from among the nominees recommended by the engineering societies. . ."

The society emphasized that its letter "should in no way be construed to question or otherwise attack the qualifications of the appointee."

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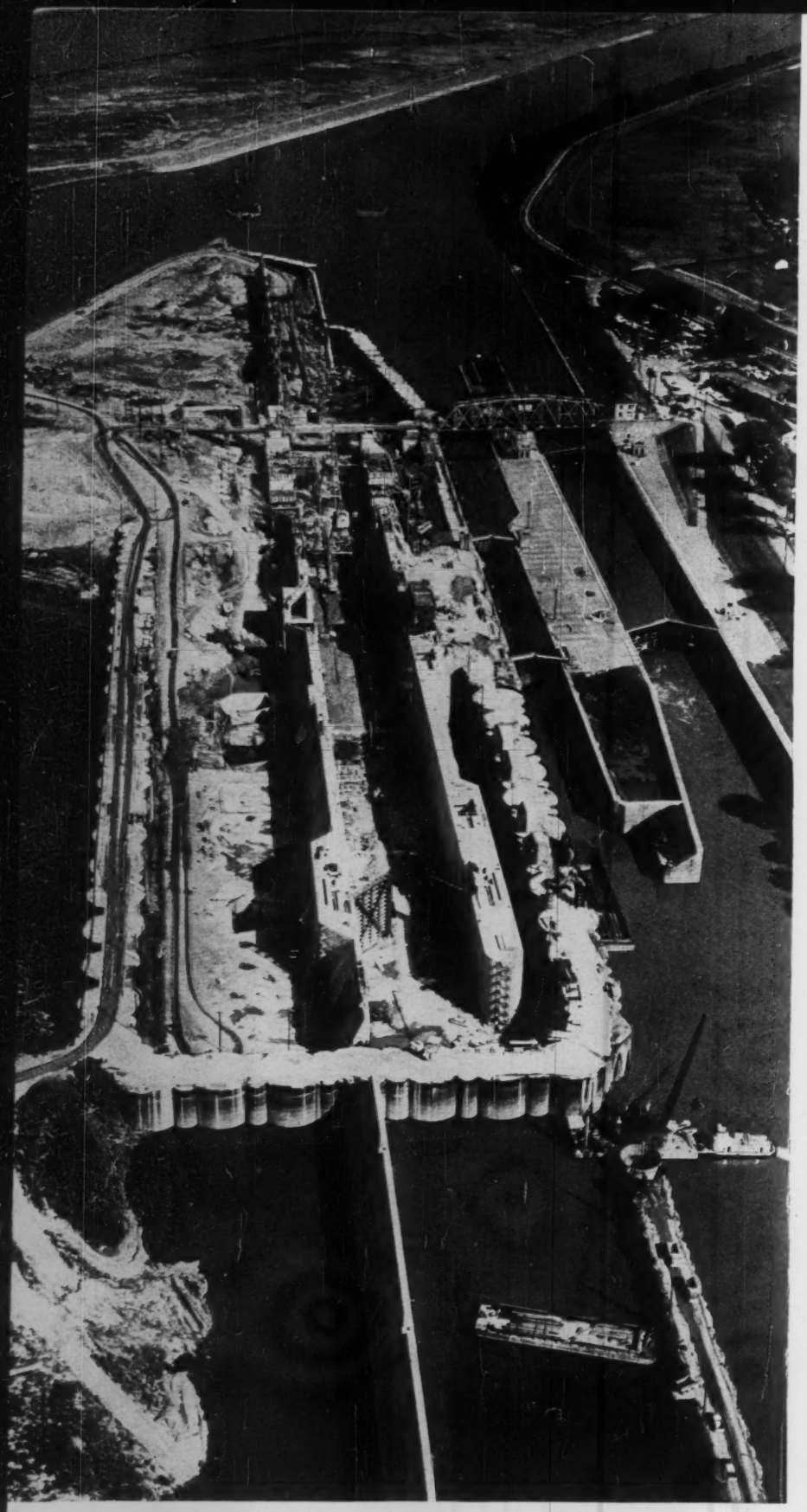


New lock at Louisville dwarfs its predecessors.

Ohio River's

By William W. Jacobus, Jr.

On the Ohio River the "Spirit of the Sixties" is one of progress, and progress along the Ohio means: locking a tow in 30 minutes instead of three hours; raising or lowering a river pool in minutes instead of hours; and most important, saving the U. S. taxpayers millions of dollars every year.

The Corps of Engineers' billion-dollar modernization program for the Ohio River Navigation system started in 1955. It involves the replacement of 46 existing locks and dams with 19 modern facilities (ENR Apr. 17, 1958, p. 65). The program is under the jurisdiction of the Corps' Ohio River Division.

The Ohio Valley is enjoying an unprecedented industrial boom. Since 1950 there has been over $15 billion in industrial development in the riverside counties alone, and this figure includes only developments of more than $1 million. In 1959 over 80 million tons of commerce moved along the Ohio—half again as much as passed through the Panama Canal.

This heavily trafficked waterway, which today functions with a navigational system that dates back to the turn of the century, is undergoing a massive overhaul that promises to have far-reaching effects.

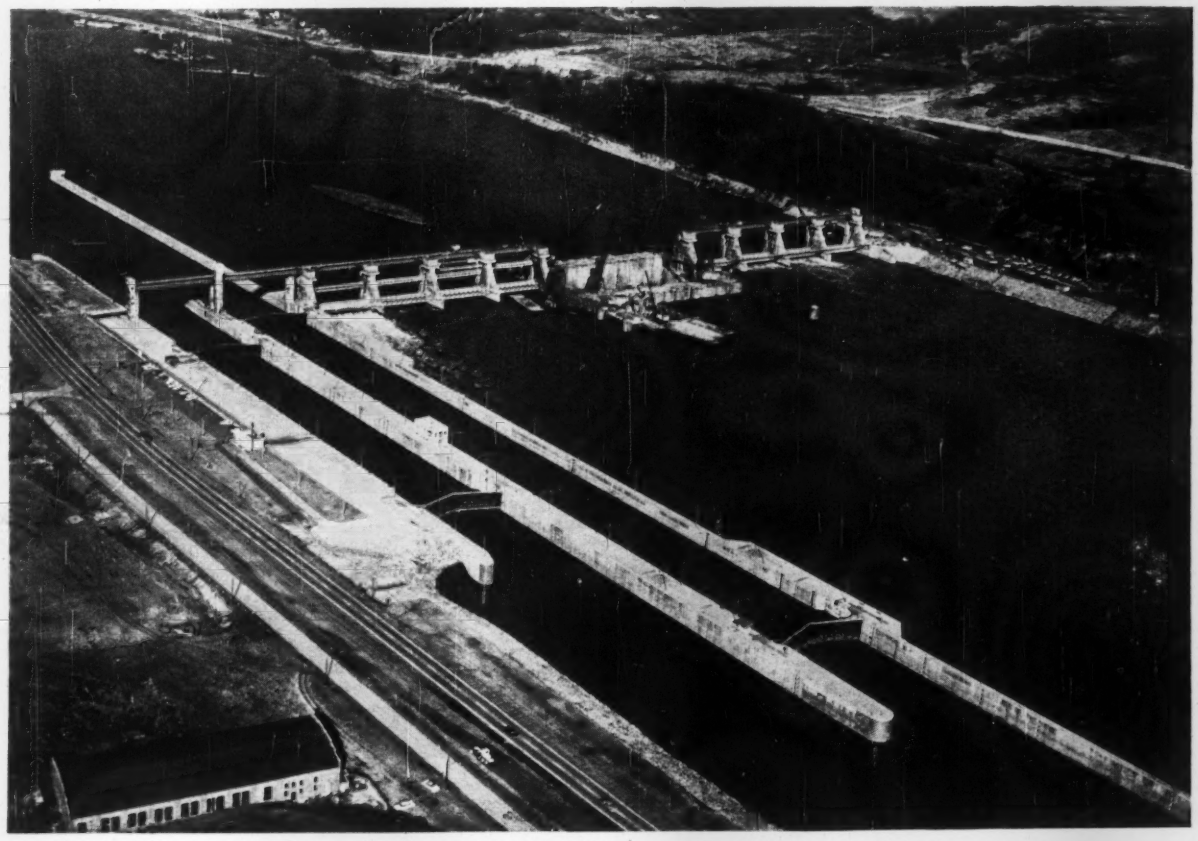
Opponents of the program see the billion-dollar improvement of a toll-free, federally operated navigable waterway as just another burden on John Q. Taxpayer. But the Corps of Engineers cites the broad economic impact of such an outlay as ample justification for the project.

The way the Corps figures, maintenance costs will be sliced substantially by replacement of 46 locks with 19. One of the new locks, although larger and more complex than its predecessor, requires about a third less manpower to operate and maintain. When the program is completed there will be many fewer lock and dam installations; manpower needs will be only a third of the total needed to operate the present system.

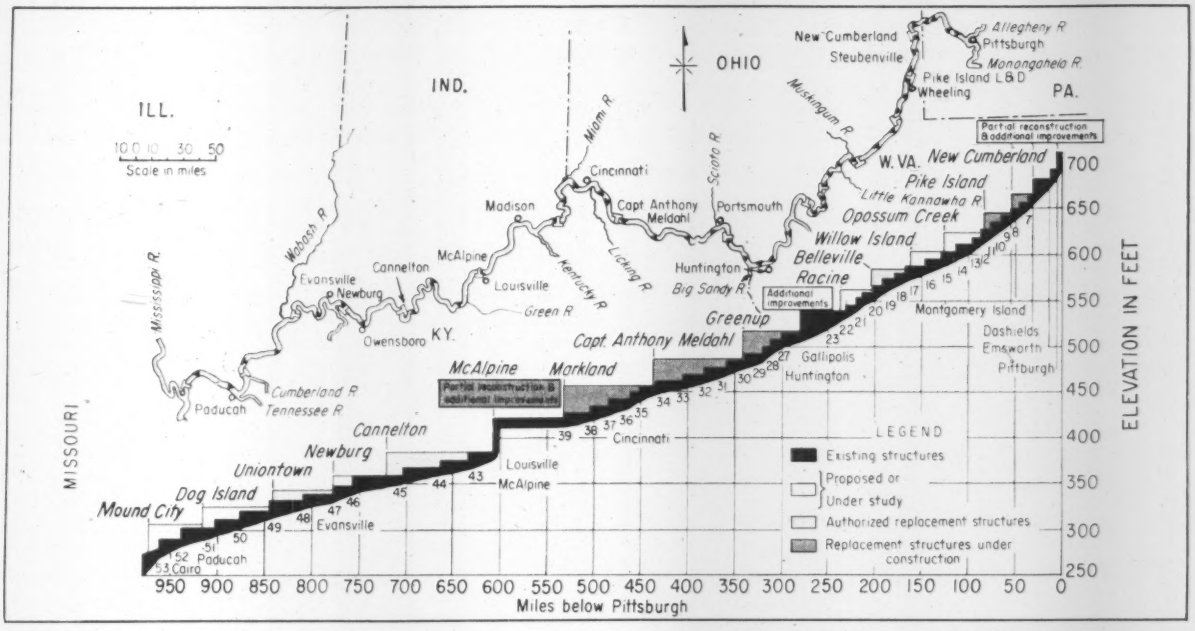
But the economic impact is not limited to the river and its users. As the Corps sees it, speeded river traffic is bound to reduce shipping charges on coal, and therefore favorably affect power rates in the Ohio Valley. Lower-cost power will encourage industrial de-

***ENR's Bill Jacobus** visited several construction projects along the Ohio to get the facts and the feel of the great modernization program now under way.*

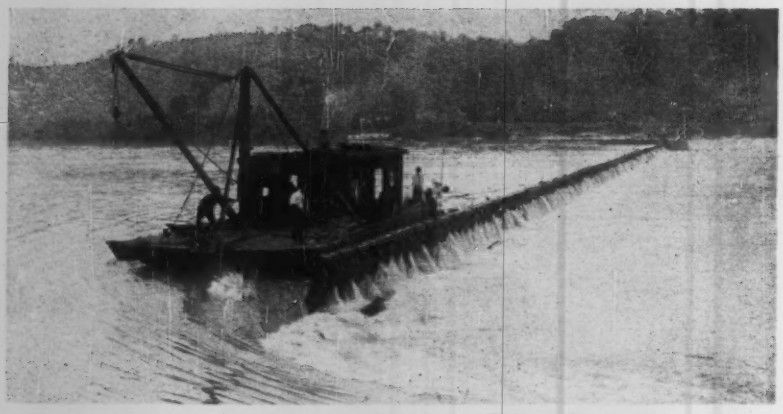
New Stairway to Pittsburgh



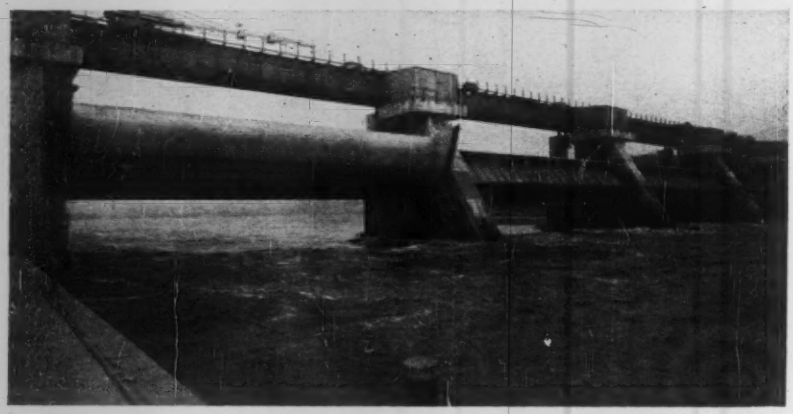
New Cumberland's parallel 1,200 ft and 600 ft locks typify Ohio's new structures.



Ohio River in profile is a navigational stairway. Six new lock will eliminate 19 old ones.



1902: Timber wicket dam was like many still in service maintaining the Ohio's navigation pool levels. Maneuver boats are edged along the dam as wickets are hooked and raised.



1961: Modern dam is non-navigable, but there are less than half as many of them. Tainter gates here are raised above high water which has nearly topped lockwall (lower left).

velopment, create more jobs and eventually bring an even greater demand for power, boosting consumption of coal produced in the depressed areas of West Virginia and Kentucky.

Although it will be at least ten years before the biggest part of the modernization is complete, the improvement program has already made an impact on river commerce.

Under the existing 46-lock setup, an average large tow (over 600 ft in length, including towboat) spends between 50 and 55 hours in lockage time navigating the full length of the Ohio from Pittsburgh to the Mississippi River. This does not include what is called pool travel time, or time spent on the open river between locks. When the modernization program is complete, possibly sometime in the 1970's, lockage time will be cut to about 10.5 hours.

The present system of locks and dams consists almost exclusively of 600-ft-long single locks coupled with antiquated wicket dams, which control the river pools between locks.

A wicket dam is a movable or collapsible structure made of timber wickets, 3' ft 9 in. wide, that hinge down and lie on the river bottom when river levels are high enough for barge tows to safely bypass the locks.

Wicket dams are ingeniously designed —but operating them is a dangerous, time consuming process. During dry season and low flow in the river, men must grope by hand with hooks and hoist each individual wicket to raise the dam. "Knocking down" the dam is a simpler, easier task, since each wicket is propped-up with a metal support—knock out the prop, and the wicket falls down (ENR Mar. 9, 1950, p. 34).

Construction of both locks and dams is now well under way. At several points along the Ohio "concrete" results are very much in evidence.

Three new locks are in operation; three more are under construction. All six major lock replacements consist of 1,200-ft-long main chambers paired with 600-ft-long auxiliary locks. All locks now under construction will be complemented by new, non-navigable gated dams. The six locks will eliminate 20 slow-acting, low-lift locks.

The reason for doubling the lock lengths is that today's tows (truly a misnomer since the barges on the Ohio are pushed not towed) run up to 1,175 ft long. Standard procedure at the existing locks is to "break" these tows into two sections and lock through each part separately.

The new locks will pass a complete tow of up to 24 barges and, due to improved design of the filling and emptying systems, will raise or lower the tow in a third the time required by the old locks.

• **McAlpine Lock**—The first major construction encountered on the Ohio, headed upstream from the Mississippi, is the McAlpine Lock, formerly No. 41, at Louisville. Old Lock 41 and its upstream, one-way-traffic canal was the most serious bottleneck on the entire Ohio River.

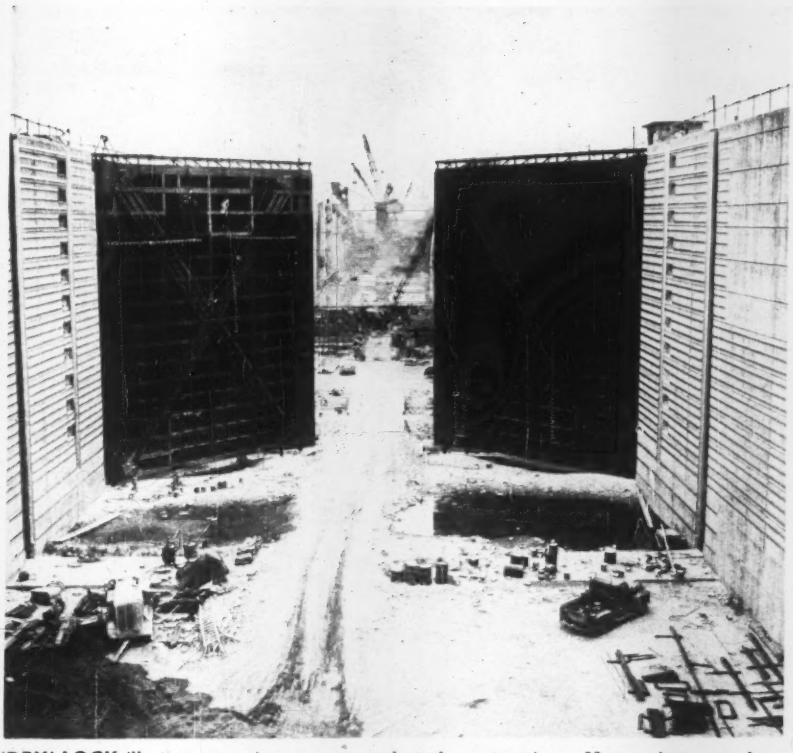
Probably the most complex facility on the Ohio's navigational stairway to Pittsburgh, the jobsite at Louisville was something less than ideal. The river at this point is very wide, but it's split into various courses by islands and by a dry area, which was a rapids before the old dam was built in 1927.

The main navigational channel hugs the Louisville shoreline, ducking behind Shippingport Island, a low, relatively empty dot of land. This channel was the original canal around the Falls of the Ohio and was built early in the 19th century. It is two miles long and until recently was only 200 ft wide —too narrow for two-way barge traffic.

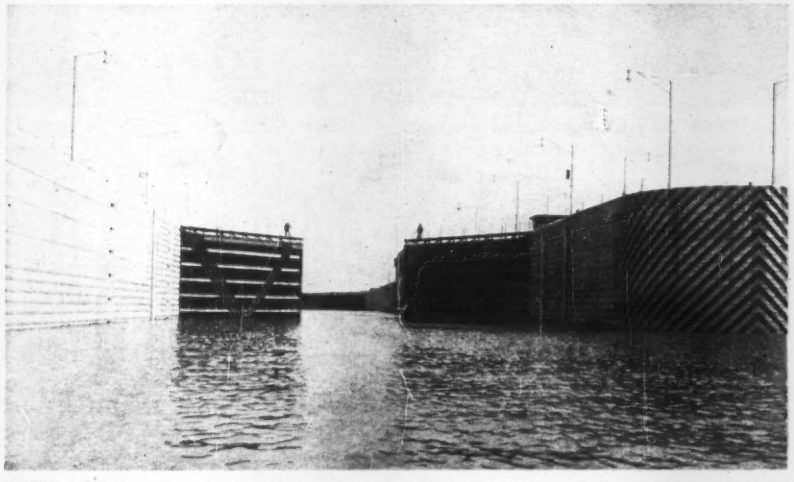
The dam at Louisville, part movable and part fixed, is one of the longest on the Ohio at 8,000 ft and it runs on several tangents up and across the stream. The longest stretch of the dam runs parallel to the river's course. This section of dam ends at a private power company's hydroelectric plant, which juts out from Shippingport Island. The existing locks—one 110 x 600 ft, the other only 56 x 360 ft—are situated between the island and the shoreline.

Even before lock construction could begin, the Corps had to relocate its repair shops and drydock, since these facilities were situated on the site of the new McAlpine lock. And there was one last—but not least—complexity. The repair shop was to be rebuilt on the island right smack in the middle of the last few remaining buildings, which once were part of the historical old riverboat town of Shippingport.

The scene at McAlpine Lock today, while it might startle an old riverboat captain, would surely afford him some satisfaction. The Corps now has a spanking new repair shop; Shippingport itself is gone and the island of the same name is considerably smaller because of the widening to 500 ft of the approach canal; and most important, the two old locks are dwarfed by a new chamber, 1,200 ft long, that now stands



'DRY' LOCK illustrates massive concrete and steel construction. Huge miter gates have thin sheet steel skin on upstream side.



'WET' LOCK, as tow boat captain sees it, is much less awesome. Like an iceberg, most of a lock is under water. Chamber extends 1,200 ft to gates in distance.

nearly finished alongside its antiquated neighbors.

The larger of the old locks—the 110 x 600-ft chamber—will be renovated and modernized to serve as the auxiliary for the main chamber. It will handle traffic when the main lock is inoperative for maintenance or repairs. The little lock, originally slated for destruction, will be modernized and used for small boats and pleasure craft.

There will be no change in pool, but a part of the dam at each end will be replaced with a modern gated section to provide more delicate control of the river's pool.

• **Markland Lock and Dam**—One of the first lock and dam combinations to be started under the modernization and replacement program was Markland, 531 river miles below Pittsburgh. The lock is completed and operating at the existing pool created by old Dam 39, just 300 ft downstream of the new dam. The dam is nearing completion and the last four tainter gates are being installed.

The Markland project is typical of the major structures now under way on the Ohio. The main lock is 110 x 1,200 ft; the dam is a non-navigable, tainter-gated structure.

The Markland pool will extend 95.5 miles upriver to the Captain Anthony Meldahl Lock and Dam—now under construction above Cincinnati. Pool at Markland will be raised 29 ft and at Cincinnati 14 ft. Markland Dam consists of 12 electrically operated tainters, 100 ft long and 42 ft high.

Working almost on top of old Dam 39 doesn't make the job at Markland any easier. The big problem: The present pool, maintained by the old dam, must be sustained as the new dam is pushed across the stream.

In theory, the new dam should have no effect on river pool until the gates are put into operation. But trouble has developed at Markland because the cofferdams have pinched off the river as construction proceeds out from each side. The construction has speeded up the current enough to threaten the foundations of the old wicket dam. Even though the timber structure has been bolstered with stone heaped behind it, everyone concerned with the job will rest easier when the final coffer cell is pulled and the new dam takes over the job of maintaining the pool.

Markland Lock will have a total lift of 35 ft and replace five old low-lift locks. It will be the only lock in the Ohio between Cincinnati and Louisville.

• **Meldahl Lock and Dam**—The project formerly known as New Richmond was renamed by act of Congress after a famous river boat master, Captain Anthony Meldahl.

Meldahl, located about 32 miles above Cincinnati, is the next step in the new "high-rise staircase." The lift at Meldahl will be 30 ft. When the dam proper, not yet under construction, is finished, the new pool will extend 95.2 miles east to Greenup Lock and Dam. Meldahl will replace four low-lift locks.

Like McAlpine, Meldahl is primarily a lock construction job at this time. It will have two locks—a main chamber, 110x1,200 ft and an auxiliary lock 110x 600 ft.

The setup at Meldahl is almost identical to Markland, downriver, and to its three counterparts upstream, Greenup, Pike Island and New Cumberland. The five projects differ mainly in lock lift and length of the dam.

It is interesting to note that since the 1890's, barge manufacturers and tow companies have built barges to con-

form to the locks. Tows to this day are made up with widths of either two 52-ft-wide barges, three 35-ft-wide barges or four 26-ft-wide barges—always allowing just enough clearance to squeeze through the 110-ft width adopted long ago for lock chambers.

Now, over a half century later, the leader has become the follower: the lockbuilders are designing the locks to fit the tows. The traditional width is retained. Too much money is tied up in existing barges to do otherwise. But the length is doubled. Maximum tow length is 1,175 ft; hence, 1,200-ft-long locks.

The biggest time-saver is the extra length, which will accommodate an entire tow and save the time otherwise required to break and re-form a tow. In addition, there is a less obvious, but nonetheless important, speed-up in lockage time that is the direct result of improved lock design. This redesign makes it possible to fill or empty the main 1,200-ft lock chambers in a third of the time required by the old 600-ft structures—eight minutes instead of 25 minutes.

A major problem in lock design is turbulence and surging. For example, at Markland, when the main lock chamber is filled, 100 acre-ft of water is admitted to the 110x1,200-ft containment in eight minutes. To accomplish this, average rate of flow is over 9,000 cfs and peak rate is in excess of 17,000 cfs.

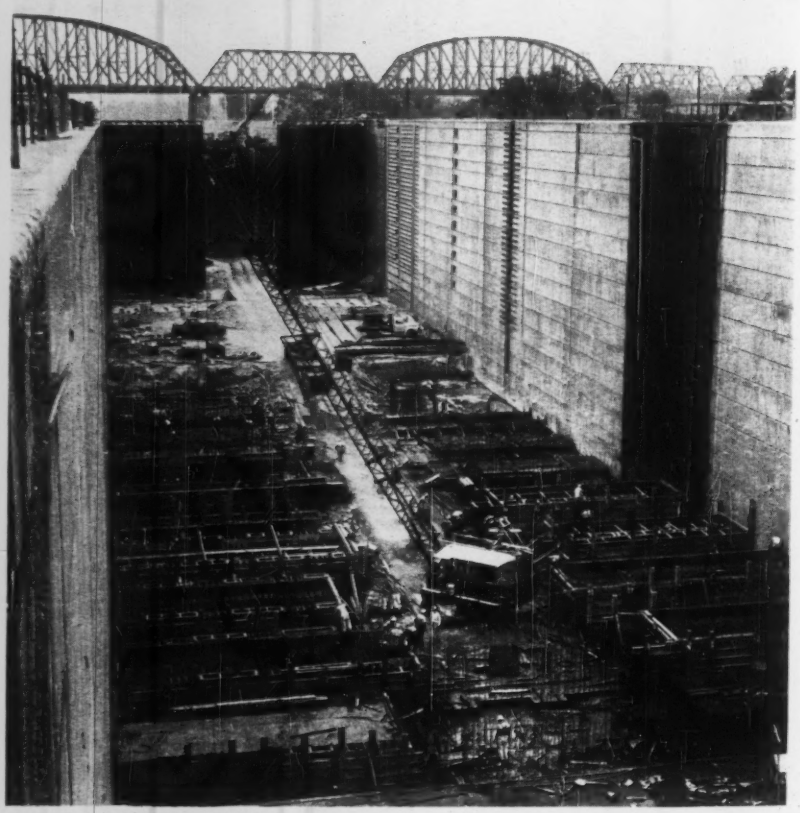
In the old locks a relatively simple system of ports in the lock walls let water directly into the chamber. Ports in the downstream section of the lock drained the chamber. Upstream ports filled it.

This system, operated at the above rates of flow, would create intolerable turbulence as well as surging, which causes excessive hawser stresses. Snapped moorings caused by this kind of disturbance mean damage to tows and to lock structures, not to mention dangerous operating conditions.

To beat this turbulence problem the new locks have a system of bottom laterals linked to main culverts built within the lock walls. This design is relatively new to this country.

The bottom laterals can best be described as rows of parallel, dead-end tunnels that run crosswise in the floor of the lock chamber. They are fed and drained by the culverts.

Flow in the 16x18-ft main culverts is controlled by hydraulically operated tainter gates. The culverts discharge into the lower pool outside the river wall via large chutes. The discharge culvert for the auxiliary lock, which, in all cases, is on the inland side of the main lock, runs under the floor of the main chamber.



LATERAL SYSTEM at McAlpine Lock consists of cross-wise tunnels that are ported to admit or drain water. Laterals are fed by big culverts in lock walls.

The dam at Meldahl will be started next year and have 12 gates, each 109 ft wide and 37 ft high.

• **Greenup Locks and Dam**—Greenup, like Markland, is in the dambuilding stage. Both locks are completed, but they're functioning only as passages around the construction cofferdams, which are now blocking the river. Greenup Dam, about 12 miles southeast of Portsmouth, Ohio, is roughly 50% complete.

Although at most of the projects there will be no difference in pool until the dams are substantially finished, the lock chambers, as they are completed, are being operated as locks, not just open bypass canals. With the river partially pinched by cofferdams, water would sluice through the open locks like a millrace and make passage of a tow impossible.

Greenup's pool will extend 62 miles upriver to Gallipolis Lock and Dam, a fairly modern facility slated for a new 110x1,200-ft lock in the future. The lift at Greenup is 32 ft and the higher pool will eliminate the need for four low-lift locks and dams. It will also eliminate one lock, No. 1, now out o service in the Big Sandy River, an Ohio tributary.

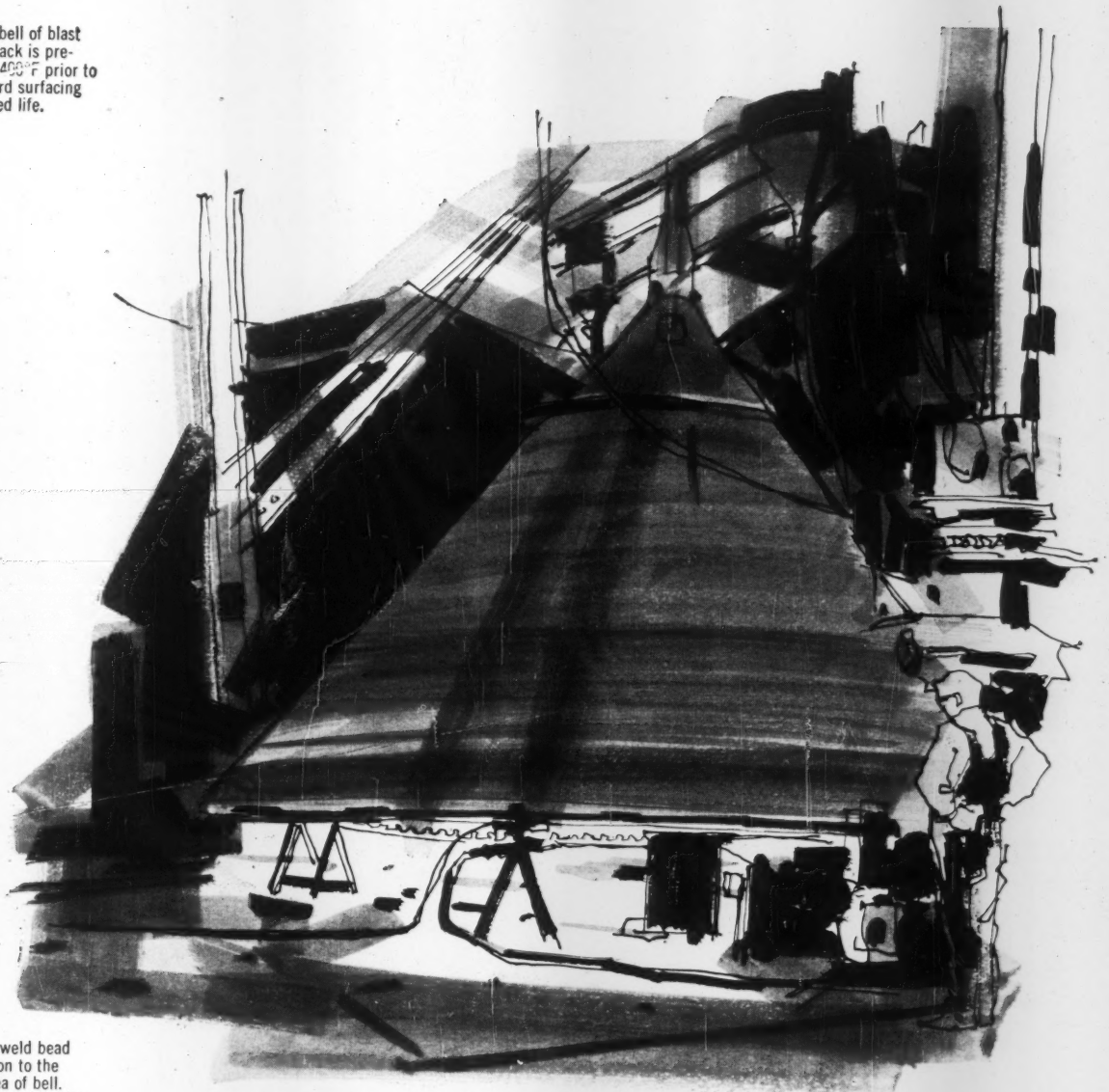
Greenup Dam will have only nine tainter gates, but they are the same size as those at Meldahl. The entire Greenup project is due for completion about December of this year. At that time, river pool will be raised and the upstream locks will be flooded out of service.

In some cases, as the new regulatory dams go into operation the pool just below the dam may actually be slightly lower than before. Where this happens the old locks and dams, just downstream of new ones, may have to be removed. This will be done in most cases with explosives.

• **Pike Island Lock and Dam**—Just started this year, the Pike Island installation is still in the cofferdam construction stage. Located six miles above Wheeling, W. Va., the project will be

(*Story continued p. 35*)

■ Giant bell of blast furnace stack is pre-heated to 400°F prior to Mahon hard surfacing for renewed life.



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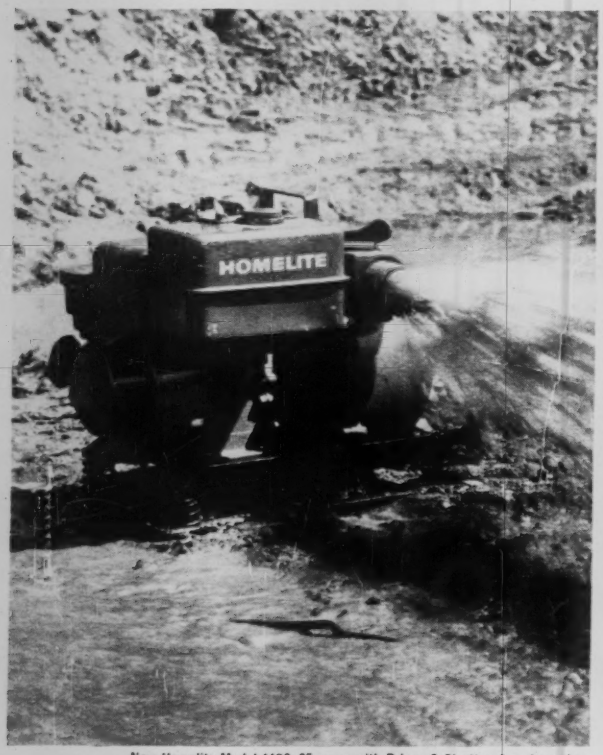

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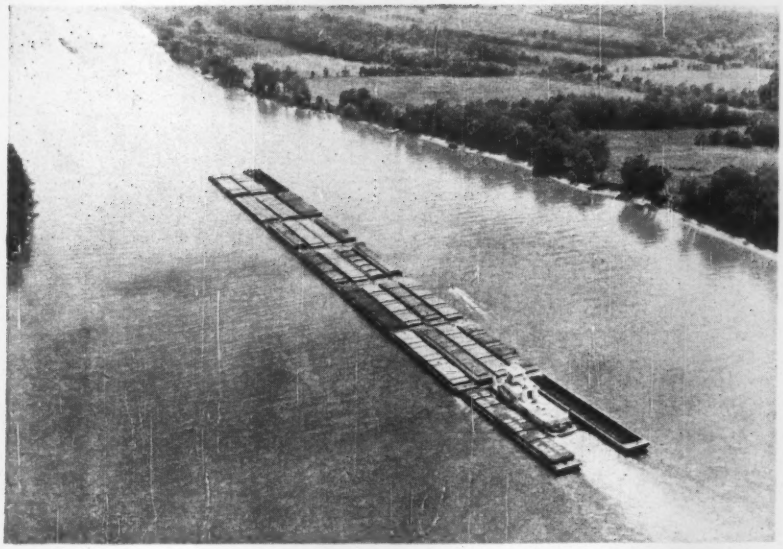


BIG TOWS like this 24-barge "river liner" will save many hours negotiating the busy Ohio when the improvement program is completed.

almost a twin for any of the locks and dams discussed previously.

The lock structures here, a 1,200-ft main lock and 600-ft auxiliary, are to be completed in 1963. Then Pike Island Dam, another non-navigable gated structure, will be started. This dam will raise the pool between Pike Island and the almost complete New Cumberland Locks and Dam as much as 18 ft.

• **New Cumberland Locks and Dam**—First to be started, the New Cumberland project will be completed next summer. The third-stage cofferdam for the center section of the dam is in place and dewatered. This third-stage coffer completely blocks the river. While the last three tainter-gate bays are being built the other eight gates will be put in service and the pool will be partially raised.

Bids were opened in October for removal of old locks No. 8 and No. 9, one above and one below the new dam. Lock No. 7, farther upstream, will go out of service when final pool is attained next summer.

The dam at New Cumberland, near Stratton, Ohio, is representative of all the new dams going up on the Ohio. Eleven tainter gates comprise the dam. Each is 24 ft high and 110 ft long. Five of these are submergible and will serve as spillways for delicate control of pool elevation and for passing ice and trash.

On the old wicket dams this kind of control was difficult and generally involved manipulation of weirs, usually built at one end of the timber structure. In some cases, sections of the wicket dam were lowered for control, but this created great scouring of the river bed and at times threatened to undermine the dams' concrete sills.

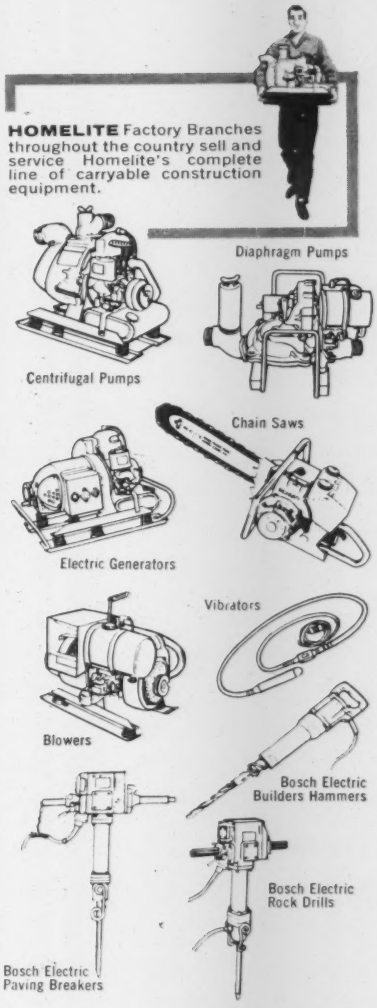
The new dams will be operated from a central control station. Tainters are raised and lowered electrically.

The hoist motors for each gate drive a shaft that can be linked to the drive shaft of the gate on either side. This creates a theoretical common shaft running the length of the dam. Should a gate hoist break down, the motors on an adjacent pier can be tied to the drive shaft and operate the crippled unit.

A rail-mounted hoist slung under the service bridge runs the length of the dam and is used to install emergency gate sections should it be necessary to dewater a tainter for repairs. The four emergency gate sections are stored in slots between the piers of the dam. The emergency gates also can be used in the locks to dewater the miter gates.

The lift at New Cumberland Lock and Dam will be 22.6 ft and the raised pool will eliminate three old locks. The dilapidation of the existing locks in this stretch of the river was emphasized in a speech made in 1954, by the then Chief of Army Engineers, Maj. Gen. Samuel D. Sturgis, who said, "I am not exaggerating when I say that the 40-year-old Lock No. 7, just below Pittsburgh, can collapse any day" (ENR Apr. 8, 1954, p. 26).

Fortunately, none of the Ohio River's navigation locks have literally collapsed, but its a sure bet that as the new locks come into service, first at New Cumberland, then at Markland, and Greenup, and on down the construction schedule, everyone concerned, from the Corps of Engineers to the outboard-motorboat buff, will have reason to rejoice.



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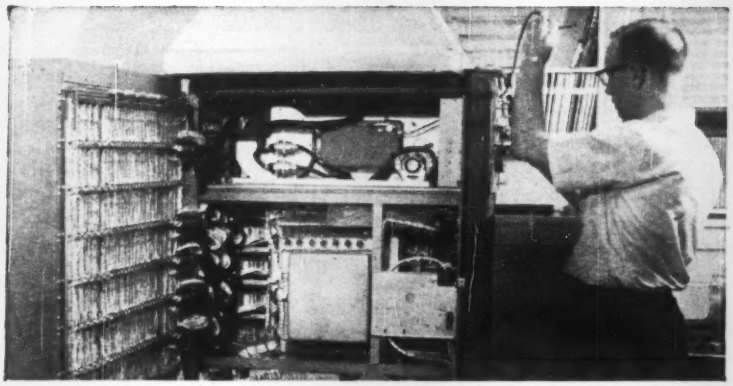

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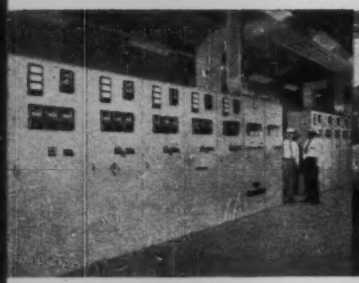

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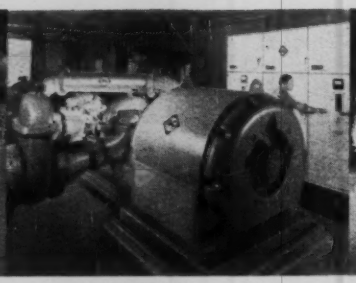

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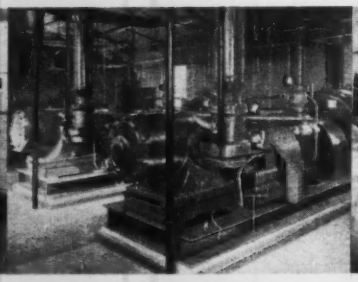

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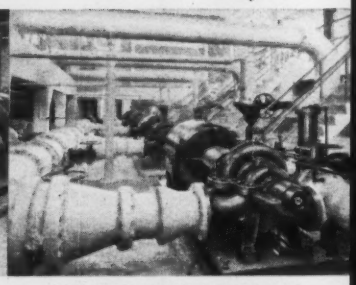

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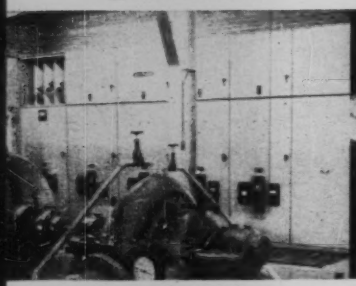

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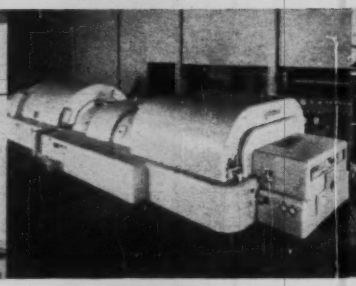

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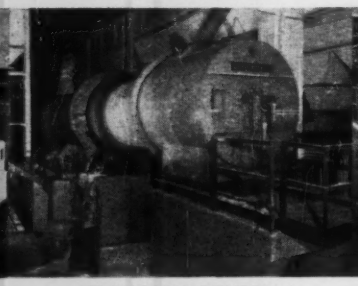

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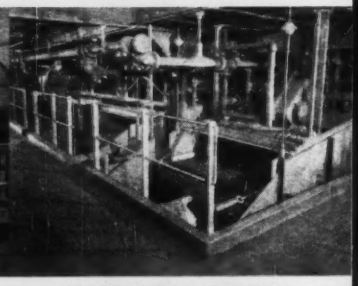

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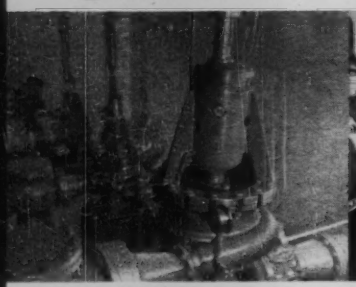

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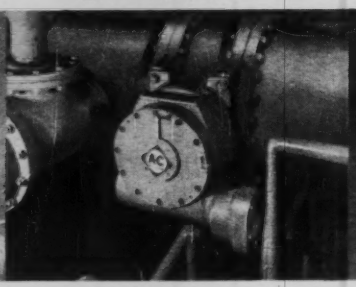

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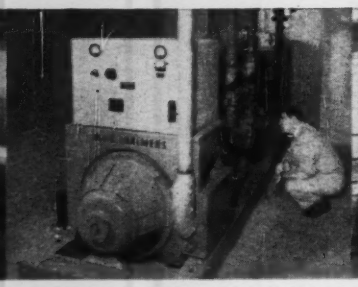

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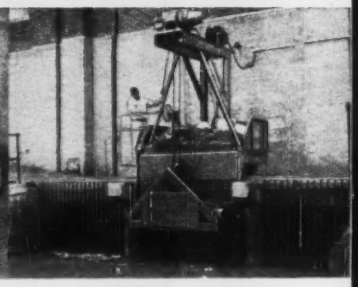

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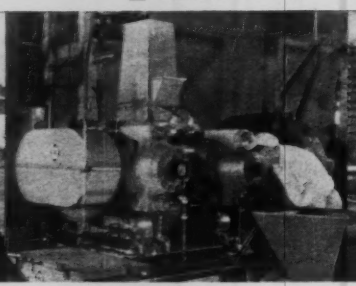

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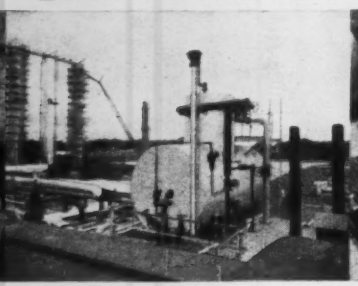

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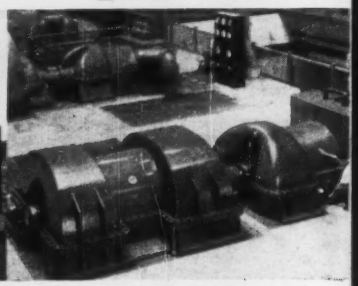

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A-1311

Honeycomb of Pipes Damps Echoes

By Jacob J. Creskoff

Architects on the Main Line Reform Temple in Wynnewood, Pa., have solved the old problem of damping echoes under a dome roof. Their solution: a concave honeycomb formed by 13,000 concrete pipe sections projecting from the ceiling surface.

The dome measures 70 ft in diameter and rises 20 ft, with a concrete compression ring at the apex framing an 8-ft-dia skylight opening over the center of the sanctuary. The honeycomb pattern of the pipe sections is a circular band covering about 65% of the dome area.

The concrete pipes, 4-in.-dia sections 8 in. long, are spaced at 6 in. c-c in perpendicular directions. They project 6 in. below the concrete surface. Stationary air columns set up within the pipes absorb sound energy and interfere with the sound reflections that would reverberate off a smooth dome ceiling. They also increase the dome's thermal insulation.

The architects also specified a 1-in.-thick "biscuit" of glass wool packed into each pipe section. Tests conducted at the Radio Corp. of America's acoustical laboratory in Camden, N. J., showed that this would further diminish echoes under the dome.

Post-tensioning the peripheral tension ring solved another problem faced by the architects. They wanted to preserve a relatively crack-free shell to permit use of an economical, reinforced plastic roofing material. Prestressing to resist the dome's thrust seemed the best solution.

Concreting and post-tensioning of the ring girder preceded concreting of the dome shell. Three sheathed tendons, each 82-ft-long arc segments spanning 135 deg, overlap about 18 ft, anchoring in pockets formed in the tension ring. A shorter, but much stronger, tendon is placed in the bottom of the 40-in.-deep ring girder to resist bending stresses over a 54-ft arc span of 90 deg. Regular column spacing around the ring is 7-ft arc segments of 30 deg. Two columns are omitted to provide a wide entrance to the sanctuary.

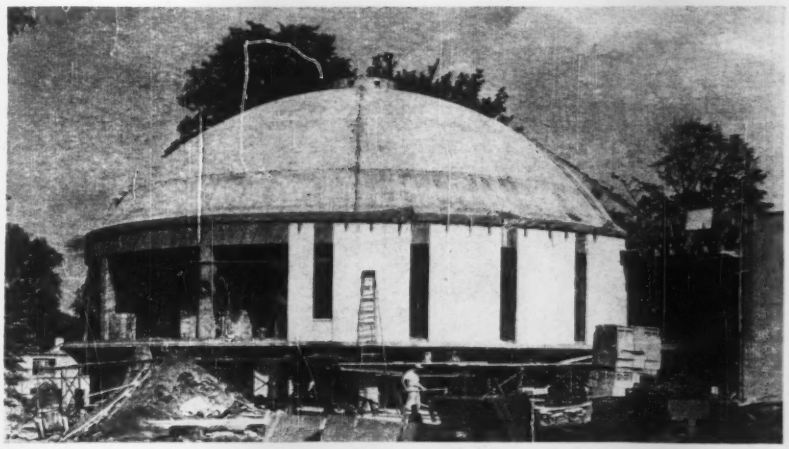
The three overlapping tendons were made up of ten ¼-in. wires of 240,000 psi ultimate strength; the fourth was made up of 36 ¼-in. wires. To achieve a final prestress of 144,000 psi, the subcontractor tensioned the tendons to an initial prestress of 192,000 psi. Friction loss and combined concrete shrinkage and creep loss were each computed at 24,000 psi.

After the post-tensioning operation, the tendon sheathing was pressure-grouted and the pockets concreted.

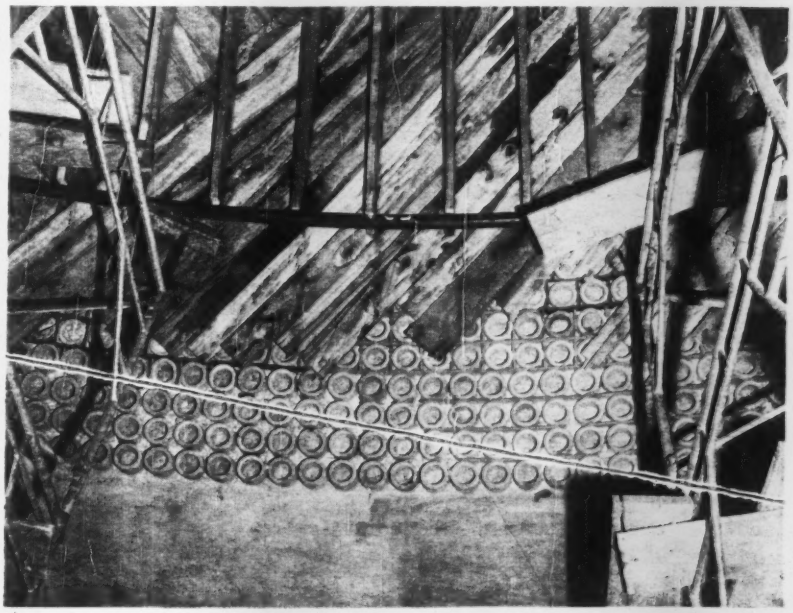
Constructing the dome posed some intricate formwork problems. Workmen placed the pipe sections perpendicular to the soffit form, blocking them in position with strips of fiberboard nailed to the form. Then they packed a 6-in. layer of glass wool between the pipes, leaving 2 in. of pipe embedment in the dome shell. Insides of the pipes were packed with loose wood plugs and paper and topped with the glass-wool biscuit. Wire ties, threaded through holes predrilled in the pipes and wrapped around the reinforcing, anchored the pipes to the dome.

Supports for wood ribs supporting the dome sheathing were 2½-in.-dia steel pipe welded into concentric rings of 33-ft and 53-ft diameter. They were supported by pipe scaffolds at third points on the ring circumferences.

A four-man crew—two carpenters and two laborers—erected the wood ribs in



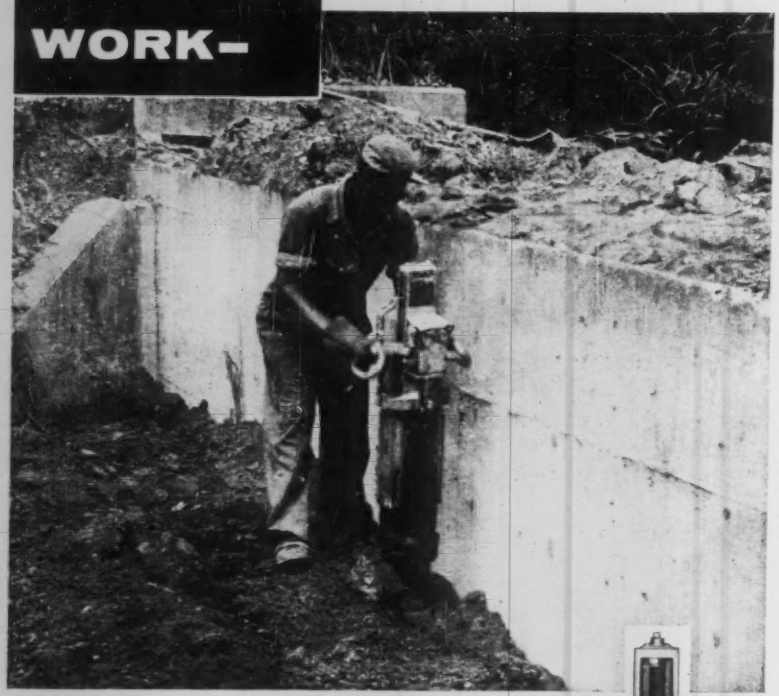
Dome roof has post-tensioned ring girder.



Concrete pipes set in ceiling absorb sound energy.

Mr. Creskoff, internationally known engineer, was consultant to the building committee of the Main Line Reform Temple. He is president of the Vacuum Concrete Corp. of America in Philadelphia.

ON ROAD WORK–



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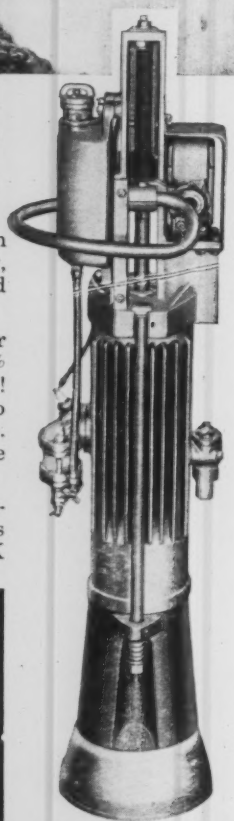

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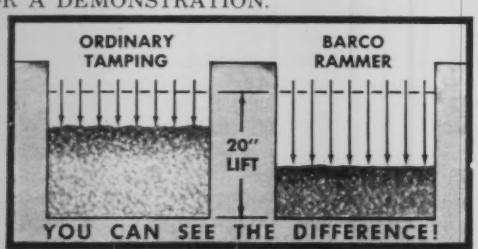

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four days. Prefabricated to proper curvature, the 2x12-radial ribs were notched to bear on the steel pipes.

Carpenters finished nailing the sheathing and blocking for the compression and tension rings soon after they finished placing the ribs.

To take advantage of a hardened concrete platform for part of his concreting operations, the general contractor cast the dome in three stages. He spaced the pours at seven-day intervals to allow the concrete to attain sufficient strength to support construction loads. Throughout the seven-day curing period, the concrete was covered with burlap kept continually wet by soaker hose.

The first pour of 16 cu yd covered the smooth-ceilinged, steeply sloping part of the dome adjoining the peripheral tension ring. The following pours, containing 28 and 32 cu yd respectively, were somewhat easier.

In the first two pours the concrete was lifted by conveyor belt to working platforms, from which laborers wheeled it in buggies. In the final pour, a crane lifted the mix to the deck, nearly 40 ft above grade, and the laborers chuted it into place. Finishers, working from a stepped timber scaffolding above the dome, steel-trowelled the surface.

The dome shell is reinforced with 6x6 6/6 wire mesh. Reinforcing dowels, extending into the dome shell at right angles, resist local bending and shear stresses at the tension and compression ring girders. Concrete for the dome shell is lightweight, 4,000-psi mix.

Second-floor framing for the circular sanctuary building is a flat-plate slab, 9-in. thick. A ring of 12 columns, 10 of which are haunched to support the eccentrically located roof columns above, provides exterior support for this slab. There are six interior columns. Two circular grade beams brace these columns below ground floor level.

Precast concrete wall panels with exposed quartz aggregate will face the circular periphery of the sanctuary.

Reinforced concrete Vierendeel trusses, 7 ft deep, span 58 ft at the auditorium roof. Concrete plank, fabricated from masonry units reinforced with pressure-grouted bars and topped with 2 in. of concrete, comprises all floor and roof slabs in the auditorium and in an L-shaped office and classroom wing. Structural framework for the whole building, except for the dome roof, is reinforced concrete.

The building's unit cost for 47,700 sq ft of floor area was $13.45.

Ehrlich & Levinson of Philadelphia were the architects; Harry Antell, also of Philadelphia, was the structural engineer. General contractor was the Fleming Co. of Wynnewood, Pa. Subcontractor for the post-tensioning work was Ryerson Steel Co. of Philadelphia.

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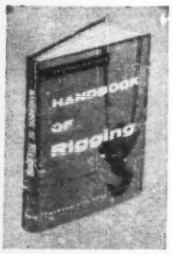

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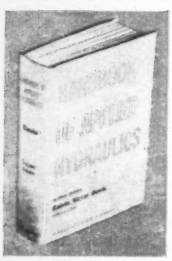

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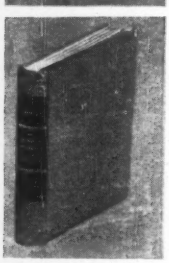

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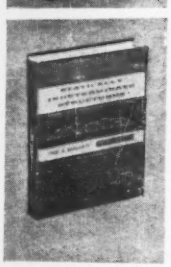

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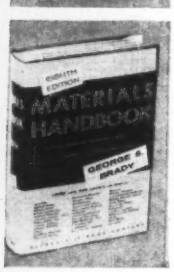

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Construction workers place reinforcing steel for the second deck slab of . . .

Pier 40: Concrete Example of

New York City's Pier 40, under construction on the Hudson River, will be not only the biggest commercial pier in the Port of New York, but one of the most versatile. It will also be one of the city's largest prestressed concrete structures.

Built to handle four ships simultaneously, it will offer separate facilities for passenger and freight operations, offices for the Holland-American Line, a 725-car rooftop parking lot and virtual drive-in service for trans-Atlantic travelers.

The new Pier 40, located on the west side of Manhattan, south of Greenwich Village, will have a 660,000-sq-ft main deck. Approximately 800 ft square, the deck will have a 200-ft-wide, two-story shed built around its perimeter. The shed will surround a 400-ft-square truck court.

The first deck will be used for freight operations exclusively. Trucks will enter at street level and transfer cargo at the 125 tailgate-high loading positions around the court.

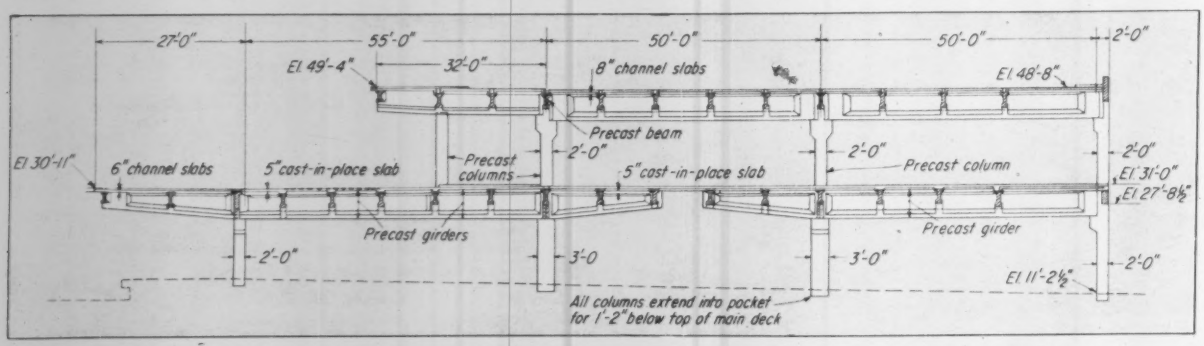
The second deck will be devoted entirely to passenger service. Taxicabs and automobiles will go directly to the second deck from the street by a two-lane ramp. For passengers who want to drive to the pier and leave their automobiles until their return from abroad, the second deck will have a storage space for 590 cars.

Another two-lane ramp from the street will lead to a 725-car public parking lot on the roof.

The concrete and steel pier is built 810 ft along the bulkhead, replacing five old finger piers. It extends 805 ft into the Hudson River, except for the south side, where a prolongation increases the pier's length to 975 ft. The pier will be able to accommodate a ship on the north side, one along the outshore berth and two at the south slip.

Steel H-piles support Pier 40. Reinforced concrete beams cast monolithically with concrete pile caps support the 6,000 precast, prestressed concrete panels that form the main deck.

Concrete columns cast in place on the main deck support the precast pretensioned beams and precast, post-tensioned girders of the second deck. This deck is a cast-in-place slab through which the beams and girders act as continuous members.



Typical cross section of second deck and roof deck of Pier 40's freight-passenger shed.

Pier 40, one of New York's largest precast, prestressed concrete structures.

Versatility

Columns cast around the perimeter of the shed to two-story height and interior precast columns resting on second-deck girders support the roof deck. Precast pretensioned beams and precast post-tensioned girders support precast reinforced concrete channel slabs that make up the roof deck. These are made continuous and composite with the beams by cast-in-place concrete strips over the beams.

More than 3,500 steel piles carry Pier 40, some 350,000 linear feet of 14-in. H-piles. All have been driven to bed rock at depths ranging from 70 to 170 ft. Only piles in the 140-ft extension piece on the south slip are battered; the lateral stability of the main part of the pier depends on lateral resistance of the piles.

Stock Construction Corp. of New York installed the piles and built the main deck under a $6,782,000 contract, which also included a cathodic protection system for the steel piles, a fendering system and dredging alongside the pier to a depth of 38 ft below mean low water level. Stock used the decks of three of the five old piers as work platforms from which to drive piles.

One of the largest single cathodic protection systems ever installed defends the steel H-piles against corrosion. An electrical current produced by the reaction between the steel and existing chemicals in the water causes corrosion of the piles. This flow of current causes minute steel particles (ions) to leave the surface of the piles. The result, over a period of time, is pitting.

New pier replaces five old finger piers on Hudson River.

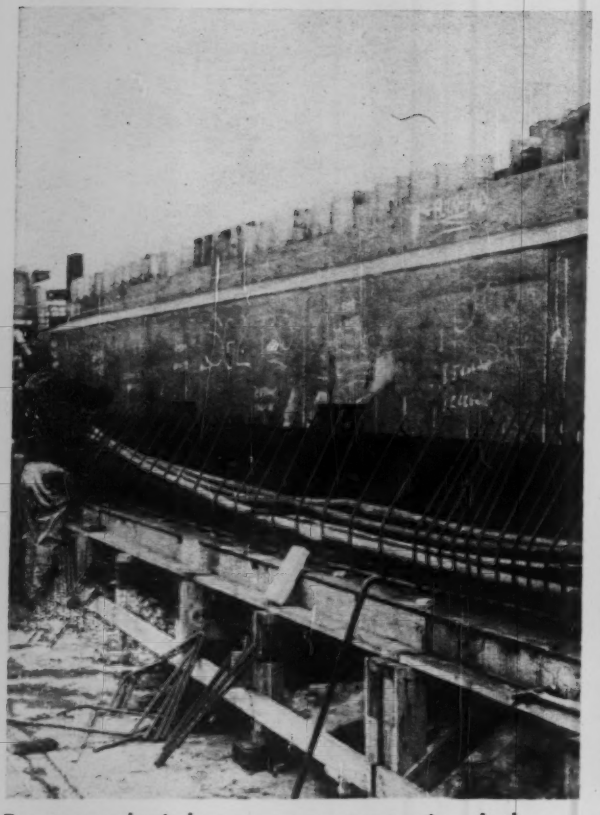
The cathodic protection system prevents corrosion by reversing the direction of flow of electric current. An electrical circuit is established, consisting of a source of direct current, graphite anodes placed in the water, and the piles. The graphite anodes are connected to the positive side of the direct current and the piles to the cathode side. This passes the current from the anodes through the water to the piles. The impressed-type system at Pier 40 will have some 1,400 graphite anodes hanging in the water among the piles to distribute the current in a uniform pattern. A bituminous coating protects the piles in the splash area.

Stock gave a subcontract to Fischbach & Moore, Inc., New York City, to install the system. The Harco Co., Cleveland, designed it.

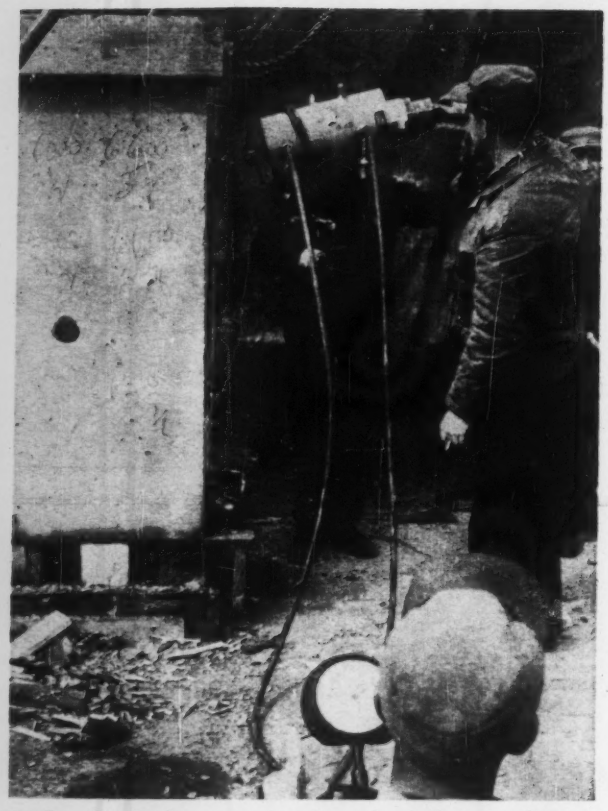
Corbetta Construction Corp., the New York company holding the contract for the superstructure, and Precrete Inc., also of New York, formed a joint venture to produce and place the main deck panels. The panels are 1 ft thick, 5 ft wide and 20 to 25 ft long.

The builders used 70,000 cu yd of concrete on the deck and 1,450 miles of high tensile wire in the deck slabs.

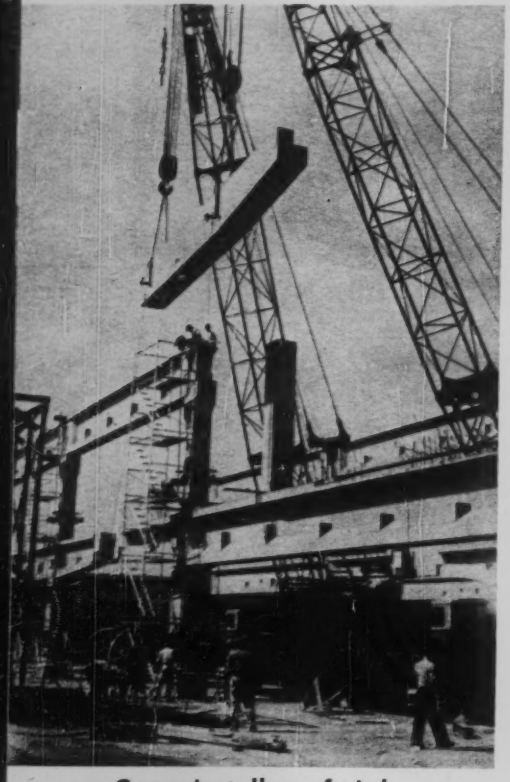
Pier 40's superstructure, as designed by Roberts & Schaefer, Inc., of New York, architectural and engineering consultants for the project, was based on a prestressed concrete framing system. Before bids were invited, New York's Department of Marine and Aviation, the owners, decided that structural steel



Prestressed girders were cast on pier deck.



Hydraulic jacks post-tensioned girder tendons.



Crane installs roof girder.

might be cheaper. The department wrote into the specifications the possibility of submitting an alternative bid for steel. The contractor would have to prepare the design for steel.

Corbetta got the contract for the superstructure with a $3,977,000 bid for prestressed concrete. This was 7% less than the low bid for steel.

Corbetta was faced with limited working space, the Hudson River on one side and busy West St., full of trucks and taxis going to and from piers, on the other side. A long, narrow strip of land between the street and the shore was left, plus the surface of the main deck.

The post-tensioned girders for the second deck and roof, 396 of them, were cast on the pier itself, near the bases of their supporting columns. Intricate wood forms for these girders were moved about the deck as the job progressed. The builders used the system of Prescon Corp., Corpus Christi, Texas, in post-tensioning the girders.

The contractor decided to cast 12,000 reinforced concrete roof panels in molds set up in line between the bulkhead line and West St. Working on an assembly-line basis, Corbetta turned out 119 panels every other day, storing the completed panels on the main deck.

The 1,800 precast, prestressed beams for the second deck and roof deck were produced in the Precrete yards, in the beds used for main deck panels.

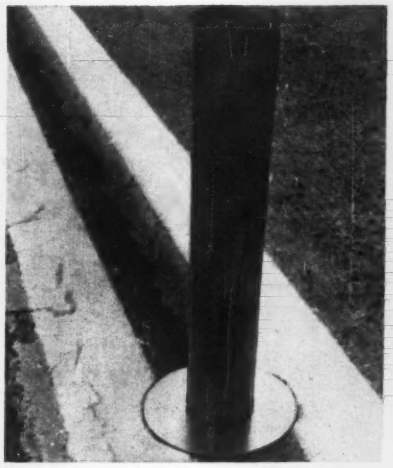
After casting the columns for a bay of the shed, Corbetta's cranes lifted the second-deck girders into place. Many of the interior second deck columns were precast monolithically with the girders. At this stage, these girders supporting roof columns had to be shored.

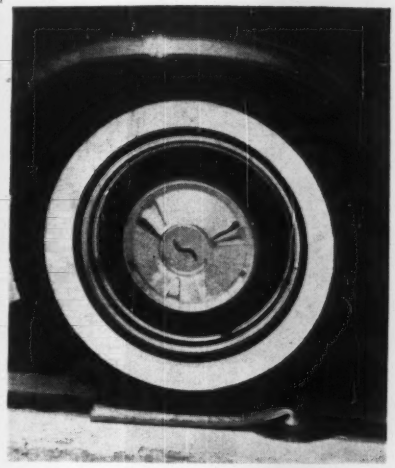
The next step in the construction of a bay of the shed was to erect the roof girders and the pretensioned beams on these girders. Precast channel slabs were erected over the roof beams and then the precast, pre-tensioned beams for the second deck went up. Girders that required prestressing in two stages were post-tensioned in place, lifting them off the shoring.

Final stages in the bay erection were the concreting of the slab for the second deck and the slab bands between precast panels over the roof beams.

This method enables prestressing to take the entire dead and live loads on the structure, while avoiding overstressing.

Roberts & Schaefer, Inc., of New York, designed the pier under the direction of D. P. Denitto, a vice president. David Billington was project engineer. Resident engineer for R & S is Anthony F. Muscariello, and for the Department of Marine and Aviation, Ray Woods.





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The "Fixatron" traffic marker can be struck repeatedly by automobiles without damaging the automobiles, without being damaged itself, and without having to be reset after each impact.

The "Fixatron" consists of a 16-in.-long, 2½-in.-dia tube mounted on a flat metal disk base.

The tube, which is bright yellow and can be reflectorized, is made of "Hypalon," a synthetic rubber manufactured by Du Pont. When hit by a passing vehicle, the tube simply lies down; when the vehicle has passed, it resumes its normal shape and position. According to its manufacturers, the Hypalon is extremely resilient and long-lived.

The base of the tube can be glued to any pavement by either an epoxy or a mastic. On a concrete pavement it can also be anchored by a power-driven anchoring stud. On a dirt road it can be attached to a stake driven flush with the road surface.

While the "Fixatron" markers are particularly well suited to jobs requiring traffic barriers for protracted periods of time, they can also be moved quickly when it is necessary. The base plate can be moved with the tube or, if too well anchored, can be left on the roadway surface. Nationwide Traffic Engineering Co., Inc., 160 Northfield Road, Bedford, Ohio.

Crawler Crane Hoists 80 Tons

The Model 880 is a crawler-mounted crane with capacity of 80 tons.

The crawler side frames may be removed by screwing retractable telescopic axles into the crawler body; tread belts and drive chains are left intact on their frames. Removal of side frames reduces over-all machine width for shipping on flat car or truck. A heavy-duty tilting and folding mast gantry reduces the over-all machine height to the cab top level for further ease of shipping or travel. Boom hoist reeving need not be disturbed when lowering gantry.

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T-1 Steel Frame Makes Light, Strong Trailer

The use of high-strength T-1 steel has permitted a trailer manufacturer to produce a 35-ton-capacity level deck trailer that weighs only 10,050 lb. This weight is up to one-third less than most trailers of comparable size and capacity, according to the manufacturer.

The trailer, designated Model T3L-35-FG-1-T, has three axle spring suspension, tubular axles, air brakes and an 8x27-ft deck area. Talbert Trailers, Inc., 7950 W. 47th St., Lyons, Ill.

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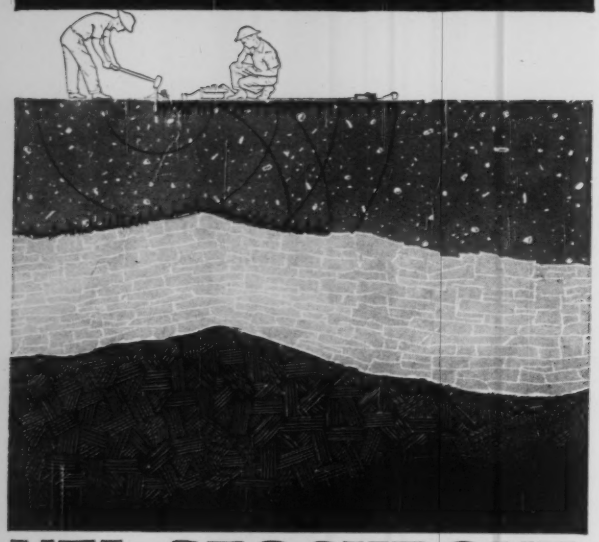

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One Cent Can Make a Difference

By John Baer

Ask the average chief of a state highway department about his highways and you get a gush of superlatives.

Ask Park H. Martin, Pennsylvania's Secretary of Highways, and he says:

"I wish I could tell you Pennsylvania has a highway system that is second to none. Actually, the truth is that Pennsylvania is confronted with a critical highway situation.

"Our primary highways are not adequate. Our secondary roads are hazardous in many instances. We have 4,400 bridges that have weight, height and width restrictions and these bridges are unsafe and obsolete."

Mr. Martin's situation is critical, but not unique. Like a lot of other state highway chiefs, he needs more money.

"Pennsylvania is spending $160 million on construction this (fiscal) year where we ought to be spending $250 million," he says, pulling down the corners of his mouth to emphasize the seriousness of this. "Unless the present revenue structure is changed, this will drop to $147 million next year, because of increasing costs of maintenance and other departmental expenditures."

Like many other highway department heads, Mr. Martin believes the best way to get the money is to raise the gasoline tax (ENR Dec. 22, 1960, p. 189). He advocates increasing Pennsylvania's from five cents a gallon to six or seven cents. He hasn't been able to get it so far, because of a political situation common to several states—a governor of one party and a legislature controlled by the other.

Democratic Gov. David Lawrence pushed for a one-cent increase in gasoline taxes in 1959, but a Republican-controlled State Senate bottled the proposal up in committee.

The governor is expected to have another gas tax bill in the works for the current session of Pennsylvania's legislature, possibly a two-cent rise. And chances for passage are fairly good. The Democrats won three additional State Senate seats in November, giving them exactly half of the 50 seats. This puts them in a position to control the body, because Lt. Gov. John Morgan Davis, a Democrat, acts as president of the Senate. He votes on organizational matters in the event of a tie. This means his party will be able to control all committees and force an open showdown on controversial legislation. And some Republicans who want highway improvements in their home districts are likely to vote for gas tax increases once a bill clears committee.

Park Martin's position in all this is unusual. He is a Republican, himself, although politically inactive.

"I sit on the sidelines and observe it," he says, dismissing political affairs with a wave of his hand. "I don't let politics run the department, but I am very conscious that as a part of a Democratic administration, it's my job to cooperate where I can. I would get out if I couldn't cooperate."

A far cry from the stereotyped inarticulate engineer, Mr. Martin cooperates by taking his campaign for more highway funds to the people. Hoping to influence them to influence their legislators, he tells his audiences bluntly that their roads are in bad shape.

"We have a huge problem," he told a group recently. "Our highways are old in many respects. About 30,000 miles of the (41,753-mile) system are obsolete."

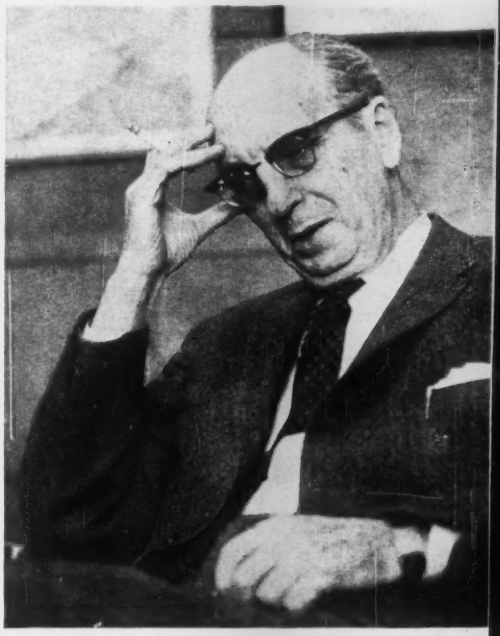
Not all these miles must be rebuilt, but if conditions don't improve, "we will be so far behind we won't catch up for 50 years," he warns. "Unless more revenue is provided for highways, the commonwealth will be confronted with a crisis that could be detrimental to its economy."

Mr. Martin blames the petroleum lobbyists for bottling up the tax bill in the 1959 session.

"I am at a loss to understand the logic behind the petroleum interests opposition to an increase," he told a recent meeting of the Pennsylvania Highway Material Producers Conference.

"Since in Pennsylvania there can be no diversion of gasoline funds into non-highway uses, the money would be used to provide a better highway system which in turn would encourage greater consumption of the products sold by the oil interests.

"One or even two cents a gallon added to Pennsylvania's five-cent levy would not reduce the consumption of gasoline," he said and warned again that the state must have that additional penny to go through with its highway construction program.



"Our highways are old in many respects."

Mr. Martin usually tells his audiences that Pennsylvania with more than 41,000 miles of highways spends less per year on construction than Ohio, with only 18,291.

Those who have been associated with Park Martin expect a tax increase to go through, if only from the force of his campaigning. For most of his life Mr. Martin has been endowed with the combination of ability and energy that makes for success.

Born near Pittsburgh, in Allegheny County, he has spent most of his career working in and for the area. He decided to become a civil engineer because, "I liked the outdoors and I was intrigued by the high boots. I thought I'd like that kind of life."

He graduated from Pittsburgh's Carnegie Institute of Technology in 1911 and worked for more than 20 years in private engineering in the same city, part of the time in his own consulting firm. He began his long career in public service in 1933, as chief engineer and assistant director of the Allegheny County Department of Public Works. In 1935 he was placed in charge of the County Department of Planning and from 1936 to 1945 he

John Baer, ENR's Harrisburg correspondent, has been covering the Pennsylvania capital since 1942 and Park Martin's activities since 1959.

directed the department and formulated its long-range public works program. He planned the Greater Pittsburgh Airport and was intimately connected with planning of the Penn-Lincoln Parkway and North and South Parks.

Mr. Martin left county service in 1945 to become executive director of the Allegheny Conference on Community Development, a privately financed citizens organization concerned with planning, developing and advancing a comprehensive community development project for Pittsburgh and Allegheny County.

The conference had the backing of both major parties and most of the prominent citizens in the area. It worked for a modern highway network, a county-wide sewage treatment system, the redevelopment of Pittsburgh's Point, and for the air-pollution control system that ended "Smokey City" as a nickname for Pittsburgh (ENR Nov. 19, 1959, p. 56).

Park Martin won nation-wide recognition for his work with the conference. In 1955 the American Society of Civil Engineers made him an honorary member, the highest honor of the civil engineering professsion can bestow. In the same year he was elected president of the American Society of Planning Officials. Carnegie Tech made him an honorary doctor of engineering in 1949. Ten years later the University of Pittsburgh conferred an honorary doctor of laws degree on him. The Newspaper Guild of Pittsburgh presented its outstanding achievement award to him in 1954 for his public service.

The Secretary of Highways apparently thrives on his 50-year diet of hard work and adds to it by serving on numerous boards and commissions for religious and community organizations. Although young for his age (70) he draws the line at clambering on bridge superstructures or taking over a bulldozer's controls for the benefit of press photographers. Ribbon-cutting at highway openings is as far as he goes.

As executive director of the Allegheny Conference, Mr. Martin worked closely with Pittsburgh's four-term mayor, David L. Lawrence. After Mr. Lawrence was elected governor in November, 1958, he appointed Mr. Martin to head the Department of Highways.

"I do not believe there is another man in the Commonwealth as highly qualified for this important position as Park Martin . . . and I am confident that he will prove his extraordinary capacities in this post as he has in many others in the past," said Governor Lawrence in announcing the appointment.

"I'VE BEEN PRESSURED to give design work but practically none has been given."

"Extraordinary capacities" were needed by any man taking over the Pennsylvania Department of Highways in January, 1959.

The department had had 17 chief administrative officers in the past 40 years. Only 27% of its employees classified as engineers were graduates or licensed engineers. More than two-thirds of the departments 15,000 employees were workers on hourly wages, most of them in maintenance. The department needed 500 additional engineers.

Last May state civil service records disclosed that one out of every nine of the department's engineering staff had either failed in a civil service qualifying examination or failed to show up to take the test. Neither the Civil Service Commission nor the Department of Highways would use its power to drop these men from the state payroll, because of the shortage of personnel there.

A recruitment program raised the number of engineers from 543 in 1957 to 704 at the end of 1959. But by mid-1960 Mr. Martin conceded that the drive was not paying off. He blamed low salaries and an executive board type of civil service. Under this system the administration grants civil service status to certain engineering and technical personnel under an executive order. But this status can be rescinded by the existing administration.

"I am quite convinced that we will not be completely successful in our recruitment efforts until the legislature institutes a more permanent type of civil service for professional and technical personnel," Mr. Martin told members of the Highways Committee of the state's House and Senate.

Governor Lawrence ordered a round of raises for engineers last month, but job security, one of the strong attractions in state highway work, is still inadequate in the Keystone State.

As though Mr. Martin lacked for problems, at the end of his first year as secretary of highways, U. S. Comptroller General Joseph Campbell accuse the department of waste and delay in administration of the state's 1,541-mile share of the Interstate highway program. The General Accounting Office criticized the department's use of consultants for design work and conditions that existed in the department before Mr. Martin took over. The state was spending $1 million a month on consultants, the report stated, suggesting that there was a touch of payola involved.

The GAO report set off an inconclusive legislative probe into the department's activities. Private engineering companies now do 76% of the department's design work, as compared with 90% in 1958. Mr. Martin's goal is 60% of design done by consultants and 40% by his own staff.

"I don't think that the use of consulting engineers is expensive. In fact, I thing it's cheaper," he says. "If we could find the men to build up a big departmental design staff, they would be involved in civil service and costly retirement rights. It would be difficult to reduce the staff when things got slack."

The Comptroller General's report charged that design contracts were given to consulting firms as a form of political patronage.

"I've been pressured to give design work (to the politically favored)," said Park Martin. "But as far as we are concerned, there has been practically none given. I've been asked in a few cases to consider someone if we have a job, but we have privately rated all of the consulting engineers and give out work on that basis."

The secretary claims similar impartiality in his department's choice of materials. The agency is in a sensitive position, because Pennsylvania is one of the nation's leading producers not only of steel, but of cement and asphalt. He says his department doesn't try to strike a balance between concrete and asphalt for highways and concrete and steel for bridges.

"We basically pick the type of materials to be used depending on the type of road or bridge and the traffic demands," he says. He leaves it to his engineers to specify the material and he hasn't interfered with these decisions except on one occasion. That time he discovered that his designers planned to use asphalt for a highway running right in front of a huge cement plant. He vetoed that plan and ordered a surface more in sympathy with the neighborhood.

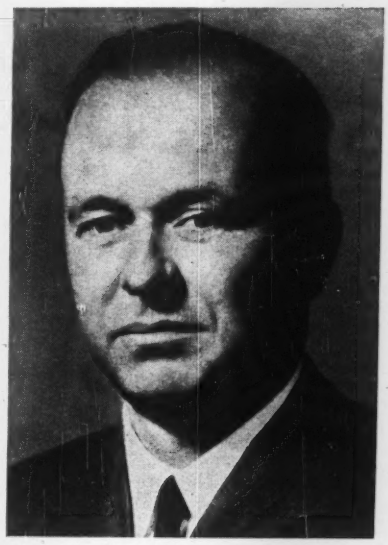
Bechtel Stays in the Family

Stephen D. Bechtel, Jr. has stepped into the shoes of his father and grandfather and walked into the president's office of the Bechtel Corp., San Francisco, international engineers and constructors. He is the third Bechtel to head the business, which was founded by his grandfather, W. A. Bechtel, more than 60 years ago.

The new president joined the company in 1948 as a field engineer and held various field positions before taking over pipeline operations in the U. S. and Canada in 1952 as a vice president. He moved to the home office in 1955 as a senior vice president and director of Bechtel Corp.

Two years later he became executive vice president of the parent corporation and in 1959 was named chairman of the firm's executive committee. He is a graduate in civil engineering from Purdue University and holds a Master's degree in Business Administration from Stanford University.

Stephen D. Bechtel, Sr., while retiring as president at 60 years of age, will remain chairman of the board of directors of Bechtel Corp. He entered the construction business with his father in 1925. He is also a director of Pacific Gas Transmission Co., the Nuclear Power Group, Southern Pacific Co., Industry Indemnity Co., Morgan Guaranty Trust Co. of New York and Continental Can Co.



Stephen D. Bechtel, Jr.

He is a director or member of the Ford Foundation Board of Trustees, the National Industrial Conference Board, the Committee for Economic Development, the San Francisco Bay Area Council and the Council on Foreign Relations.

Briefs . . .

Business

Bernal H. Swab and **Ralph E. Leffel** have joined the staff of Camp, Dresser & McKee, Boston consulting sanitary engineers. Mr. Swab, former chairman of the Joint Committee of the ASCE and WPCF which prepared the Manual of Engineering Practice "Design and Construction of Sanitary and Storm Sewers," has been active in the U. S. and Brazil. Mr. Leffel has been in Columbia since his retirement from the Corps of Engineers as a Colonel in 1946. He is expected to remain there to participate in a sewerage study of Bogata.

George C. Love has been transferred from the Houston office of H. E. Bovay Jr. Consulting Engineers to the Richland, Wash., office where he will be chief engineer. He replaces **Robert O. Grimes,** now an associate of the Bovay organization at Houston.

Robert V. Lord has bought the facilities of Western Laboratories, Inc., in Lincoln, Neb. The firm will continue to do consultation in soil mechanics under the name of R. V. Lord and Associates, Inc.

Leanard E. Van Houten has been appointed a vice president of Frederic R. Harris, Inc., a New York City consulting engineering firm. A specialist in marine terminals and petroleum handling, he has been in charge of the company's office in the Hague, Holland.

Harland Bartholomew and Associates, St. Louis civil engineers, city planners and landscaping engineers, has opened an office in Memphis, Tenn., to be under the direction of **W. S. Pollard,** a partner in the firm.

Colonel William F. Powers has been appointed executive director for the construction of the Lincoln Center for the Performing Arts in New York City. He succeeds **General Otto L. Nelson, Jr.,** who will continue to serve the Center as a consultant. Both are retired from the U. S. Army Corps of Engineers.

Stanley T. Thorfinnson has been appointed chief engineer for the Denver office of Woodward-Clyde-Sherard & Associates, consulting soil engineers and geologists. He had been District Engineer for the Omaha District of the Corps of Engineers for the past 14 years.

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Briefs . . .

John N. Beckley, vice president, eastern district manager and a director of the Austin Co., engineers and builders from Cleveland, Ohio, has been named manager of international operations of that company. He will have his headquarters in the company's New York City office.

Boris S. Kalinovsky has joined Cooper & Clark, soil and foundation engineers, Palo Alto, Calif., as consultant. For the previous 18 years, Mr. Kalinovsky has been employed in various capacities by Dames & Moore, soil and foundation engineers, San Francisco.

William R. Hill, formerly superintendent of the Wadsworth, Ohio, sewage treatment system, has been named to a similar post in Warren, Ohio.

Public Works

E. H. Cowan, district engineer for the Bureau of Public Roads in Salem, Ore., has been appointed division engineer for Montana, succeeding **W. N. Huffine** who is transferred to Washington, D. C.

Larry Reich is the new assistant commissioner of planning and research in Chicago's Department of City Planning. He was formerly chief of the comprehensive planning Division of the Philadelphia City Planning Commission.

In an administrative regrouping, California has added a third Deputy State Highway Engineer. He is **J. W. Trask,** to be in charge of planning. Other deputy engineers are: **J. P. Murphy**—operations, and **C. E. Waite**—administration.

William W. Black of Oxford, N. C., has been named senior field engineer for the Housing and Home Finance Agency in his home state. He has been assistant field engineer.

James H. Foster, formerly with the Corps of Engineers, is the chief engineer for the Indianapolis Flood Control Board.

Henry B. Wildschut, Milwaukee County expressway engineer, has been appointed director of Milwaukee County public works, replacing **Eugene A. Howard,** who has retired.

Allen J. Cummings has been appointed administrative engineer in the Colorado Public Works Department. He was formerly construction engineer in the Denver public school system.

Henry Ward, general manager of the Louisville Chamber of Commerce has been named Kentucky State Highway Commissioner to succeed **Earle C. Clements,** who resigned.

Obituaries

James J. Doland, 70, professor of hydraulic engineering, University of Illinois. A member of the Illinois faculty for 32 years, Professor Doland also served frequently as a consultant—to the National Resources Planning Board, the Upper Mississippi and Ohio Project Review Committee, the Corps of Engineers on the Caribbean airbases and the Sanitary Corps on the ASTP program. A graduate of the University of Colorado in 1914, he worked for the Hoy Construction Co. in St. Paul and the U. S. Bureau of Reclamation in Denver before joining the University of Illinois faculty in 1926.

George M. Bull, 87, engineer and public works official who played an important part in development of Colorado water resources. His original transmountain water diversion studies for the Denver Water Board formed much of the basis for Denver's present water system.

William L. Locke, 81, retired vice president of Stone & Webster Engineering Corp. A civil engineer, he had been with Stone & Webster in Boston for 42 years until retiring in 1953.

Robert Hayden, 73, a civil engineer and former construction engineer for Turner Construction Co. in Philadelphia and New York City. Since his retirement from Turner in 1953, he had been a construction management engineer for the U. S. Army Corps of Engineers.

George W. Shanley, 85, Montana architect and designer of many schools and public buildings in the Montana area. He had been senior partner in Shanley, Shanley & Anderson, Great Falls, Mont.

Charles H. Schwertner, 65, civil engineer and founder of C. H. Schwertner and Son, Inc., general contractors of Philadelphia. He had been a life member of the American Society of Civil Engineers and a past president of the Associated General Contractors of America.

Robert H. Crone, 60, hydro power expert for Ebasco Services, Inc. With time out for Naval service during World War II, Mr. Crone had been with Ebasco since 1923. He supervised design and construction of many hydroelectric plants. His most recent assignment was with Project Matterhorn, a thermonuclear fusion research and development project at Princeton University.

Elvind G. Elstad, 58, a senior partner of Severud-Elstad-Kreuger-Associates, New York City consulting engineers. He was recognized for his work in the Arctic, notably on Thule Air Force Base, Greenland, and the DEW Line.

John H. Tacke, 61, associated since 1931 with Kaiser Engineers on hydroelectric and atomic reactor construction projects. He joined the company to work on Hoover Dam in Nevada and later helped in the construction of Grand Coulee Dam in Washington. He was resident manager on the $145-million Hanford reactor project.

Samuel M. Suskin, 59, vice president and director of the HEW Construction Co. of Boston. He was a former president and director of the Associated General Contractors of Massachusetts.

J. L. Heacock, 88, partner in the Philadelphia architectural firm of Heacock and Platt. Mr. Heacock, who graduated from the University of Pennsylvania in 1895, was one of the oldest practicing architects in the country. He was one of the organizers and a past president of the Pennsylvania State Association of the American Institute of Architects and an emeritus member of the AIA.

Harold R. Sleeper, 67, architect and commissioner on New York City's Board of Standards and Appeals. An authority on architectural and construction specifications, he wrote several books and taught at Columbia.

Earl J. Felt, 52, manager of the transportation development section of the Portland Cement Association's research and development laboratories. In his 20 years with the association, he had become known for his work in highway engineering, particularly in soil cement.

Herber Ashley, 68, retired colonel in the Corps of Engineers and chief of maintenance in the Buffalo District Office of the New York State Department of Public Works. He supervised construction of the Rainbow Bridge at Niagara Falls and was a past president of the New York State Association of Highway Engineers.

James F. McDonald, 55, who operated a general engineering business in Knoxville, Tenn., doing water treatment design work and cadastral surveys. He had been with Stone & Webster Engineering Co. before going into business for himself.

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	STRUCT SHAPES—	PLATE CARBON STEEL	REINF BARS* billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	STEEL RAILS Per Net Ton Light	TRACK SUPPLIES Angle Bars	TRACK SUPPLIES Std Spikes	TRACK SUPPLIES Tie Plates	TRACK SUPPLIES Track Bolts
Birmingham Area	$5.50	$5.30	$5.675	$12.25		$110.50	$130.00	$6.975	$9.75	$6.60	
Chicago Area	5.50	5.30	5.675	12.25	$6.50	110.50	130.00	6.975	9.75	6.60	$14.75
Pittsburgh Area	5.50	5.30	5.675	12.25	6.50	110.50	130.00	6.975	9.75	6.60	14.75
Buffalo Area	5.50	5.30	5.675	12.25	6.50	110.50	130.00	6.975	9.75	6.60	14.75
Cleveland	.....	.....	5.675	12.25	6.50	.....	.....	.....	.....	.....	14.75
Youngstown Area	.....	.....	5.675	.....	.....	.....	.....	.....	9.75	.....	.....
Geneva	5.50	5.30	.....	.....	.....	.....	.....	.....	.....	.....	.....
Los Angeles	6.20	.....	6.375	.....	6.50	.....	.....	.....	9.75	6.875	.....
Pueblo	.....	.....	.....	.....	.....	.....	.....	6.975	9.75	6.60	.....

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Atlanta	8.01–8.36*EvV*		$8.50	$		$53.00*S*	$57.00*S*	
Baltimore	9.70		9.00*T*			44.50	49.00	
Birmingham	9.00*ty*		8.51–9.94*tyV*	8.51–9.94*tyV*		61.00*pK*	67.00*pK*	
Boston	8.21–9.31*K–eV*		8.75*t*	8.75*t*		49.50*K*	54.00*K*	
Chicago	7.07–8.34*vVY*		6.70–6.90*quV*	6.70–6.90*quV*		52.00*JU*	63.00‡*U*	
Cincinnati	7.64–8.91*VY*		8.16‡			44.50*Kg*	49.00*mnKg*	
Cleveland	7.46–8.73*vVY*		6.70*ct*			44.18*KL*	48.92*KL*	
Dallas	7.71–9.49*sr*		9.00	9.00		44.00*n*	48.50*w*	
Denver	8.12*cK*		9.25*c*			52.00*n*	57.00*n*	
Detroit	7.64–8.91*R–VyY*		7.37*Q*	11.85*Q*		67.00*O*	74.00*O*	
Kansas City	8.78*sT*		8.27*N*			51.00	55.50	
Los Angeles *y*	8.44–9.59*dktsV*		7.35*ft*			55.00*S*	64.00*S*	
Minneapolis	7.78–8.17*suV*		9.26*T*	9.26*T*		44.50*K*	49.00*K*	
Montreal	7.90–8.60*CF*/8.20–8.90*AiP*		7.00/7.50*FGi*	7.00/7.50*FGi*		65.70*h*	70.20*h*	
New Orleans			8.00*gkt–*			50.00*K*	55.00*K*	
New York	8.02–8.84*V–s*		8.60*tr*	8.60*y*		50.00*n*	58.00*no*	
Philadelphia	7.10–8.40*–sV*		8.43*uy*	9.30*y*		45.50‡*U*	50.00‡*U*	
Pittsburgh	6.96–8.23*ysV*		7.35*u*			58.50‡*rw*	64.50‡*rw*	
St. Louis	7.30–8.57*tzVZY*		7.35‡*trQ*	7.35‡*trQ*		61.00*wxK*	62.00*wxK*	
San Francisco	8.43–10.34*–sV*		9.85*iS*			53.00*S*	58.00*S*	
Seattle	8.30–10.49*aDsV*		8.85*D–*			67.00‡*nD*	73.50‡*nD*	
Toronto	9.20*H*		7.50	7.50		49.50*yqI*	44.85*qI*	

EXTRAS, per cwt.—Quantity (applies to L/L shipments only): under 1,000#, +$1.80; 1,000–1999#, +$1.20; 2000–4999#, +90¢; 5000–9999#, +60¢; 10,000–19,999#, +40¢; 20,000–29,999#, +30¢; 30,000–39,999#, +25¢; 40,000 & up, none. ◆Size: #2 #9 #10, #11 +50¢. ◆Bending: heavy, +90¢; light +$2.20; (except in New York City and surrounding metropolitan area where bending must be done on the job). ◆Engineering (details and placing from designs by others): over 500 tons, +35¢; 200–499 tons, +50¢ but not over $1500; 75–199 tons, +55¢ but not over $2,000; 20–74 tons, +75¢ but not over $975; 5–19 tons, +85¢ but not over $300; under 5 tons, +$1.03 but not over $85. Min. charge $25. Design only: +60¢.

Extras, Structural Shapes: Quantity extras per cwt: item: 10,000# and over, base. 5,000–9,999#, +10¢; 2,000–4,999#, +35¢; 1,000–1,999#, +85¢; 400–999#, +$1.75; 100–399#, +$1.75, under 100#, +$1.75. W+x: 20,000# and over, base; 10,000–19,999#, +25¢; 5,000–9,999, +65¢; 2,000–4,999, +$1.50; 1,000–1,999, +$2.50; 400–999, +$4.00, under 400, +$6.00

•‡ Delivered •* Aver. of Canadian & American •# add 4% sales tax •a 2000–4999# •b 10,000–19,999#, fob city •c 20 tons or over •d 10,000–29,999# •e Intermediate struct'l •f Incl. delivery in free zone •g CL •h list price; dominion tax exempt; add provincial and municipal taxes •i add provincial and municipal sales taxes •l Intermediate and hard grade •k fob city •l delivered; contractor to do unloading •m copper alloy •n LCL •o asphalt coated •p 500 sq. yd. or more. •q 2.5 lb •r less 2% disc. for cash •s 10,000# Item in 20,000# order •t less 1–2% disc. 10 days •u add 20¢ del. •v Incl 15¢ del. •w truck lots. •x add 2% sales tax •y add 15¢ del. •z add 10¢ del. •A American made. •C Canadian made. •D 1½% for cash. •E 30,000# or over. •F Federal tax exempt for bidds. •G add 10¢ del. •H 8.85 without tariff charges. •I 3 lb $60.00. •J 4 lb $47.50. •K less 2% disc. 10 days •L F.o.b. Youngstown plant •M 1,000–9,999# •N 2,000–19,999# •O 100 cy lots •P 5 tons to CL •R residual •S less 2% disc. 10th •T less 1½% disc. 10th of mo. •U less 2% disc. 10 days •V varies according to type and size •W Chicago, Cincinnati, Cleveland, Dallas, Detroit, New York, Philadelphia, St. Louis, and Pittsburgh. •X Item extras do not apply in Chicago, Cleveland, Cincinnati, Detroit, St Louis •Y 20,000# order •Z add 20¢ del.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE PRICE INDEX*a*	ASBESTOS CEMENT PIPE T per lin. ft. 6" Press Cl. 150	12" Sew Cl. 1500	CLAY SEWER PIPE Per ft., delivered, car load ASTMC 13-55 8 in.	12 in.	ASTMC 200-55T 24 in.	36 in.	CLAY DRAIN TILE† Per 1,000 ft., car load lots, f.o.b. ASTMC 4-55 6 in.	8 in.	CONCRETE SEWER PIPE*b* Per ft., delivered ASTMC 14-55 12 in.	24 in.
Atlanta	130.6	$1.52/1.69	$2.38/2.48	$0.58*r*	$1.14*r*	$4.88*r*	$12.00*r*	$200.00*mr*	$	$0.95*mKr*	$3.75*mKr*
Baltimore	140.2	1.61/1.69	2.19/2.30	.665	1.20	3.05	12.71	187.80	289.20	1.01	2.75
Birmingham	125.8	1.52/1.69	2.26/2.37	.50*r*	.95*r*	4.14*rw*	13.50*rw*	295.00*rz*	430.00*rz*	1.75*rS*	2.75*rS*
Boston	143.2	1.63/1.71	2.19/2.30	.84*qrtL*	1.55*qrtL*	6.39*qrtM*		244.00*r*	348.60*r*	1.56*S*	3.60*S*
Chicago	140.0	1.48/1.69	2.19/2.30	.93*rm*	1.78*rm*	7.52*rm*	21.16*rm*	220.00*Br*	330.00*Br*	1.30	4.00
Cincinnati	135.6	1.63/1.71	2.19/2.30	.56*Rt*	1.11*Rt*	4.50*Rt*	13.22*R*	177.50*R*	274.60*R*	.85*rAB*	3.25*rAB*
Cleveland	141.8	1.63/1.71	2.19/2.30	.66*BCN*	1.27*tBC*	8.47*tBC*	23.45*tBC*	179.40*mBC*	276.60*mBC*	1.35	2.40*P*
Dallas	137.9	1.63/1.71	2.26/2.37	.575‡*B*	1.09‡*B*	4.75‡*B*	10.53‡*bB*			1.27*BD*	2.95*BD*
Denver	145.1	1.71/1.80	2.38/2.48	.56*mr*	1.00*mr*	4.98*r*		460.00*mr*	640.00*mr*	1.05*m*	3.50*m*
Detroit	142.1	1.63/1.71	2.19/2.30	.97*mk*	1.86*mk*	7.48*mk*	19.95*mk*	212.00*mk*	327.00*mk*	1.40*k*	5.23*k*
Kansas City	138.6	1.49/1.71	2.26/2.37	.62*r*	1.125*r*	6.324*br*	16.86*r*	315.00*r*	625.00*r*	1.70*r*	4.25*r*
Los Angeles *#*	148.6	1.67/1.79	2.19/2.30	.82*bl*	1.78*blS*	7.19*blS*	16.90*blS*	410.00*lS*	590.00*lS*	1.24*eE*	3.66*feE*
Minneapolis	145.0	1.53/1.75	2.26/2.37	1.00*oB*	1.80*oB*	7.75*oB*		288.00	545.00	2.19*DFH*	6.31*DFH*
Montreal				1.13*u*	2.00*u*	7.00*u*	13.50*u*			1.17*D*	3.11*pD*
New Orleans	132.4	1.61/1.69	2.26/2.37	.566*r*	1.078*r*	5.65*r*		240.50*pr*	566.00	1.41*ilR*	3.76*il*
New York	138.6	1.63/1.71	2.19/2.30	.94	1.76*R*	12.89	35.61	240.81	369.84	1.50‡*B*	3.60‡*B*
Philadelphia	137.9	1.61/1.69	2.19/2.30	.75‡	1.44‡	9.40‡*s*	25.57‡*s*	230.00‡	350.00‡	1.50‡*A*	5.50‡*A*
Pittsburgh	142.9	1.63/1.71	2.19/2.30	.66*K*	1.27*K*	4.95*K*	12.92*K*	190.00	295.00	1.66*Db*	3.93*DB*
St. Louis *O*	135.7	1.48/1.69	2.26/2.37	.62*r*	1.23*r*	5.10*r*	12.95*rS*	200.00*r*	350.00*r*	1.75‡	4.05
San Francisco	148.6	1.67/1.79	2.19/2.30	.86‡*d*	1.86‡*d*	7.53‡*d*	18.00‡*d*	360.00‡	620.00‡	1.05‡*Q*	3.30‡*Q*
Seattle	149.0	1.71/1.80	2.19/2.30	.88*bk*	1.96*kb*	7.61*k*		260.00*ek*		1.90*ky*	4.50*ky*
Toronto				.80*F*	1.50*F*	6.00*F*		185.00*F*	305.00*F*	1.27*F*	5.10*F*

	•WROUGHT STEEL PIPE (Full standard weight) Discount from list: see footnote					
Mill	⅛ to 6 in. Black %	⅛ to 6 in. Galv. %	2½ & 3 in. Black %	2½ & 3 in. Galv. %	a 3½ to 4 in.	b to 1
Lorain, Ohio	+1 75*f*	+19 50*f*				
Aliquippa, Pa	3 25*a*	+14 50*a*				
Sparrows Pt., Md	+List					
Benwood, W. Va		+14 50*a*				
Youngstown, O	3 25	+15 50*a*				
Indiana Harbor, Ind	2 25*ab*					
Sharon, Pa		+13 50*ab*	13.75	+2 50	3 25*ab*	
Wheatland, Pa	3 25*a*	+14 0*a*	13.75	+3 50	3 25*a*	
Etna, Pa	3 50*ae*		13.75	+3 50	3 50*ae*	
Fontana, Calif	+16 50*b*	+9 75*ab*	0.75	+16 50*b*	+27 50*ab*	

	•CLAY DRAIN TILE† Per 1,000 ft., car load lots, f.o.b. ASTMC 4-55 6 in.	8 in.	CONCRETE SEWER PIPE*b* Per ft., delivered ASTMC 14-55 12 in.	24 in.
Lorain, Ohio			1.35	2.40*P*
Aliquippa, Pa			1.27*BD*	2.95*BD*
Sparrows Pt., Md			1.05*m*	3.50*m*
Benwood, W. Va	13.75		1.40*k*	5.23*k*
Youngstown, O	13.75		1.70*r*	4.25*r*
Indiana Harbor, Ind	13.75		1.24*eE*	3.66*feE*
Sharon, Pa	13.75		2.19*DFH*	6.31*DFH*
Wheatland, Pa	13.75		1.17*D*	3.11*pD*
Etna, Pa	13.75		1.41*ilR*	3.76*il*
Fontana, Calif	0.75		1.50‡*B*	3.60‡*B*
			1.50‡*A*	5.50‡*A*
			1.66*Db*	3.93*DB*
			1.75‡	4.05
			1.05‡*Q*	3.30‡*Q*
			1.90*ky*	4.50*ky*
			1.27*F*	5.10*F*

•† Extra quality. •‡ delivered. •# add 4% sales tax •a PRICE INDEXES or CENTRIFUGAL CAST IRON PIPE (Include carload freight allowed to city). These also serve as the HISTORICAL RECORD of THE $ PER NET TON PRICE of CLASS B, B&S, PIT CAST IRON PIPE. F.O.B. Foundry Price Indexes Birmingham, Ala., 125.8; Burlington, N. J., 134.6. For explanation of index see ENR Sept. 29, 1955 page 139. •b Extra strength. •c 4-in., $130. •d SS361-A. •f 21 in. •g culvert pipe; reinf., ASTM C 75-56. •h reinf., ASTM C 75-54. •i reinf., ASTM C 76-55. •j centrispun. •k ess 2% disc. for cash. •l fob plant. •m truck del. •n LCL del., fob truck. •p less 5% disc. 10th. •q freight allowed to destination in city. •u 35,000# minimum. •r less 2% disc. 10 days. •s 1 ft lengths. •u CSA A 60. •v standard strength. •w SS: add 20% for d.s. •x fob city. •y Reinforced. •z Upper value in range based on both truck lots and less than truck lots, fob city; lower value truck lots delivered. •A single strength. •B truckload. •C less 2% disc. 15th. •D ASTM 76-57. •E less 1% disc. 10 days. •F less 2% disc. 30 days. •G LCL. •H CL. •I fob origin, freight allowed. •J reinf. B14-15. •K Less 2% disc. 15 days. •L ASTM 13-57. •M ASTM 200-57. •N 2 ft lengths. Trucklots. •O add 2% Sales Tax. •P 18 in. •Q less 1% disc. 10th. •R revised to show carlot instead of truckload. •S ASTMC 72. 12" 1.55, 24" 4.00. •T Second price transite pipe.

WROUGHT STEEL PIPE, butt or continuous weld: Deduct (—) or add (+) these "discounts" from or to the following carlot list prices to get mill prices. Price per ft. (based on approx. $200 per net ton): 2½ in., 58½¢; 3 in., 78½¢; 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. Add freight for destination price.

WROUGHT IRON PIPE, lap weld: List prices per ft. same as for wrought steel pipe, but add these "discounts" to get Pittsburgh mill price. 2½ to 3 in., black 106% galv. 139%; 4 to 6 in., black 103%; galv. 133%. Add freight for destination price.

See following ENR issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, Dec. 15; Next, Jan. 19.
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Dec. 22; Next, Jan. 26.
- Wage Rates, Building Board, Lath, Insulation: Last, Dec. 22; Next, Feb. 2.
- Cement, Aggregate, Ready Mixed Concrete, Asphalt: Last, Jan. 5; Next, Feb. 9.

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
January 18 Maine
STREETS AND ROADS
January 19 New Hampshire January 20 Vermont
January 23 Connecticut

HEAVY CONSTRUCTION—LB & CA

▲† **Electronic & Missile Facilities, Inc.**, 2 Lafayette St., New York, N. Y., CA **$1,863,000**, barracks and housing, Loring Air Force Base, LIMESTONE, ME. U. S. Eng., 424 Trapelo Rd., Waltham, Mass. CD 8/1.

▲ **CONNECTICUT**—State Hy. Comr., 170 Douglas St., Hartford. Bids opened 1/3,
L. G. Defelice & Son, Inc., Nettleton Ave., North Haven, Conn., LB **$5,029,839** (9 bidders), 13,683 lin. ft. concrete pavement, incl. 8 bridge structures, Proj. 118-68, Federal Aid Proj. I-IG-91-29331, Wethersfield. CD 12/12.

▲ **CONNECTICUT**—State Hy. Comr., 170 Douglas St., Hartford. Bids opened 1/3,
Oneglia & Gervasini, Inc., Casson Ave., Torrington, Conn., LB **$1,551,835**, (12 bidders), 9,960 lin. ft. concrete pavement, relocation of Rte. U. S. 44 for construction of Mad River Dam, Proj. 162-73, Winsted Co. Bids Jan. 3. CD 12/14.

▲ **Daniel O'Connells Sons, Inc.**, 480 Hampden St., Holyoke, Mass., CA **$2,377,000**, est. $2,400,000, Contr. 3, sewage treatment facilities, West and Plumb Sts., PITTSFIELD, MASS. City, Dpt. P. Wks., 33 Pearl St., Pittsfield, Mass. Bids Dec. 7, awarded Dec. 28. CD 12/9, under LB.

BUILDINGS—LB & CA

▲ **Vara Constr., Inc.**, 1420 Boston-Providence Turnpike, Norwood, Mass., CA **$1,885,000**, South End ELEMENTARY SCHOOL, Highland St., LOWELL, MASS. City, Comr. P. Wks., City Hall, Lowell, Mass. Bids Dec. 19, awarded Dec. 27. CD 12/22, under LB.

▲ **Louis E. Molans Et. Al.**, 195 Ridgewood Road, West Hartford, Conn., Owner Builds, **$7,200,000**, 400 HOUSES, Pinnalle Acres, incl. golf course, Cook St., FARMINGTON and PLAINVILLE, CONN. CD 9/25/59.

▲ **Arlington Holding Co.**, 521 Fifth Ave., New York, N. Y. Owner Builds, **$4,000,000**, 44 acre Turnpike SHOPPING CENTER, Berlin Tpk., WETHERSFIELD, CONN. CD 7/6/56.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
January 27 Pennsylvania
STREETS AND ROADS
January 19 New Jersey January 24 Maryland
January 27 Pennsylvania

BUILDINGS—BA

▲ **N. Y., Jamaica**—OFFICE—BA 1/25—New York Telephone Co., 140 West St., New York, Zone 7, central telephone office and communications sys. for New York International Airport. $5,000,000. Voorhees, Walker, Smith, Smith & Haines, 101 Park Ave., New York, Zone 17, archts. CD 10/31.

▲ **D. C., Wash.**—OFFICE AND GARAGE—BA 1/26—International Bank of Washington, 1625 Eye St. N.W., 12 story masonry office and garage, 1701 Pennsylvania Ave. N.W., Vlastimil Koubek, 810 18th St. N.W., Wash. D. C., archt. CD 8/29.

▲ **N. Y., Brooklyn**—CLASSROOM, etc.—BA 1/31—Bd. Higher Educ., Brooklyn College Business Office, Rm. 1159, Boylan Hall, Bedford Ave. and Avenue H, Zone 10, Contr. 1, general contract, Contr. 2, plumbing, Contr. 3, heating, ventilating and air conditioning work, Contr. 4, electrical work classroom and staff room bldg. Brooklyn College. Extended date. Plans deposit $50. CD 12/19.

▲ **Pa., Barnesboro**—SCHOOL—BA 2/2—Pa. Pub. School Bldg. Auth., 101 S. 25th St., Harrisburg, Secondary School for Northern Cambria Jt. School Bldg. $2,000,000. Plans deposit $75. Buchart Assocs., 611 W. Market St., York, archts. CD 2/23.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,
N. Y.—Horn Constr. Co., Inc., 2174 Hewlett Ave., Merrick, N. Y., CA **$10,188,823**, 7½ in. rein. conc. slab roadway (on viaduct) 0.56 mi. misc. work 0.05 mi. sheet asph. pavt. 0.57 mi., wid'n. and strengthen exist. elevated steel structures, 33 sps. 2,936 ft. total, Interstate Rte. Comn. 512, Gowanus Expressway Cont. 2 (Hamilton Ave.-Clinton St. to Second Ave., Rte. 278, FIGE 6003, Proj. EI-278-1(54) Kings Co.,
N. Y.—Lizza & Sons, Inc., 152 South St., Oyster Bay, N. Y., CA **$2,045,333** c. conc. pavt. 2.74 mi. misc. work 1.02 mi. Conduit Blvd. Contr. SH 5701A, Pt. 5, Beech St. to Unqua Rd. Rte. 27, FAEC 60-191, Proj. U-947(23), Nassau Co.; CA **$594,951**, b. conc. pavt. 4.1 mi. Massepequa-Glen Cove, SH 9017 (Merrick Rd. to Hempstead Turnpike, Rte. 107, R. C. 60-192), Nassau Co.;
N. Y.—**The Callanan Rd. Imp. Co.**, S. Bethlehem, N. Y., CA **$501,073**, b. conc. 1.42 mi. Normanskill viaduct, SH 9109, Delaware, Pt. 2, SH 41, Rte. 43, R. C. 60-193, Albany Co. Bids Dec. 9, awarded Dec. 28. Grand total $13,330,180. CD 12/12, under LB.

▲ **Nicholas Di Menna & Sons, Inc.**, 1515 Blondell Ave., New York 16, N. Y., CA **$2,961,220**, combined relief sewer, Sound View Park, Bronx Boro, NEW YORK, N. Y. President Bronx Boro, Rm. 207, Bronx County Bldg., 851 Grand Concourse, New York 51, N. Y. Bids Dec. 16, awarded Dec. 29. CD 12/21, under LB.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton,
George M. Brewster & Son Corp., 275 West Fort Lee Rd., Bogota, N. J., CA **$10,957,307**, constr. interchange to connect George Washington Bridge with Rtes. 1 & 9, 46 & 4 and Bergen Passaic Expressway, Fort Lee, Bergen Co. Bids Dec. 15. CD 12/20, under LB.

▲† **Samuel N. Zarpas, Inc. and Fullerton Constr. Co.**, Campbells Run Rd., Carnegie, Pa., CA **$2,072,000**, 28 bomarc launcher shelters, composite bldg. A & M Bldg. addn. to SOC-TELCO facility, addn. of storage room, modification to heat and power bldg. MOGAS facility and support facilities, McGuire Air Force Base, ENG-30-075-61-69, WRIGHTSTOWN, N. J. U. S. Eng., 111 East 16 St., New York 3, N. Y. Bids Dec. 20. CD 12/28, under LB.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg, bids Dec. 30,
Pa.—**Marsolino Constr. Co.**, Uniontown, Pa., LB **$4,786,898**, 30,110 ft. RCC divided hy. each side divisor; hy. 24 ft. wide each side, 9 bridges, interstate Rte. 40, L. R. 793(3), Washington Co.; LB **$3,371,137**, 17,325 ft. RCC divided hy. 24 ft. wide each side divisor; 6 bridges, interstate, Sec. Stroudsburg bypass, L. R. 1002(3), Monroe Co.;
Pa.—**No. 1 Contracting Co.**, Exeter Ave., West Pittston, Pa., LB **$2,526,785**, 16,345 ft. RCC divided hy. 24 ft. wide each side divisor, 4 bridges, interstate, Penn-Can hy. sec., L. R. 1002(2), Monroe Co.,
Pa.—**Golden Triangle Constr. Co.**, 2552 Alequipa St., Pittsburgh, Pa., LB **$829,228**, 13,027 ft. plain cement concrete base and bit. surf. 26 ft. wide L. R. 02260(1), Allegheny Co. CD 12/19.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000; other public works $88,000; Industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily
For additional reports see Construction Daily.

▲ **PENNSYLVANIA**—State Hwy. Dpt., 506 North Office Bldg., Harrisburg, Bids opened 12/30,
Pa.—**Emich Constr. Co., Inc.**, Manchester, Pa., LB **$115,333**, 1 prestressed con. bridge, 2,632 ft., cr. agg. base hwy. with bit. surf., variable in width, L. R. 01004(6), Adams Co.;
Pa.—**B. B Constr. Co.**, P. O. Box 58, Phillipsburg, Pa., LB **$187,799**, 1 welded deck plate girder bridge, 1,575 ft. cr. agg. base hy. with bit. surf. variable in width, L. R. 24037(1)-33008(3), Elk and Jefferson Counties;
Pa.—**James Julian, Inc.**, 405 du Pont Rd., Elsmere, Del., LB **$4,948,390**, 12 bridges, 45,886 ft. divided hwy. RCC 24 ft. wide each side of median area, a sect. Downingtown bypass, Interstate T. R. U. S. 30, Chester Co. CD 12/19.

▲ **MARYLAND**—State Rds. Comn., 300 W. Preston St., Baltimore, Zone 3. Bids opened 12/27,
C. J. Langenfelder & Son, 8427 Pulaski Hy., Baltimore 24, Md., LB **$3,405,065**, est. over $3,000,000 (10 bidders), grade, drain, surf. Baltimore Beltway from Cromwell Bridge Rd. to U.S. 1, incl. interchange ramps and roadway connectiors also 4 span bridge, dual steel beam bridges, 3 concrete box culverts adjacent to Baltimore, Contr. B 635-6-7-43-420, Baltimore Co. CD 12/6.

▲ **C. J. Langenfelder**, 8427 Pulaski Hy., Baltimore 24, Md., CA **$4,410,000**, Susquehanna Water Supply Proj. No. 5, raw water conduit from Rte. 22 to Shure's Landing, BALTIMORE, MD. City, Bureau Water Supply, 3001 Druid Park Dr., Baltimore 15, Md. Bids Dec. 21, awarded Dec. 28. CD 12/28, under LB.

▲† **John C. Grimberg Co., Inc.**, 5501 Randolph Rd., Rockville, Md., LB **$2,220,000**, Item 1 LB **$2,134,000**, Item 2, LB **$2,047,000**, Item 3, LB **$1,197,000**, Item 4, (7 bidders) boilers for high temperature water sys. Naval Air Station, NBy 25061, PATUXENT RIVER, MD. Area P. Wks. Office, Chesapeake, U. S. Naval Weapons Plant, Wash., D. C. Bids Dec. 28. CD 11/28

▲ **The Arundel Corp.**, Standard Oil Bldg., Baltimore, Md., CA dredging 3,500,000 cu. yd. channel 250 ft. wide 33 ft. deep, 2 mi. long from Baltimore Ship Channel to new pier and facilities at Sparrows Point Plant, SPARROWS POINT, MD. Bethlehem Steel Co., 701 E. 3 St., Bethlehem, Pa. (Correction—contractor's name). CD 12/22, under CA.

▲ **SunOlin Chemical Co.**, 1608 Walnut St., Phila. 3, Pa., Owner Builds, **$2,000,000**, ten 8 in. pipe lines in 25 ft. rock filled trench, DELAWARE-NEW JERSEY, Sun Pipe Line Co., 1608 Walnut St., Phila., Pa., engr.

BUILDINGS—LB & CA

▲ **Frank W. O'Connell, Inc.**, 329 Water St., P.O. Box 189, Binghamton, N. Y., LB **$1,771,027**, GENERAL HOSPITAL addn., Park Ave., BINGHAMTON, N. Y. City, Bd. Contract & Supply, City Hall, Binghamton, N. Y. Bids Dec. 21. CD 11/18.

▲ **John W. Cowper Co.**, 1945 Sheridan Dr., Townawanda, N. Y., CA **$6,906,993**, general contract PUBLIC LIBRARY, BUFFALO, N. Y. Bd. Supervs. Buffalo and Erie Co., Library Bd., Buffalo, N. Y. Bids Nov. 15. Grand total $8,563,193; CD 11/18, under LB;
R. J. Moran & Sons, 361 De Witt St., Buffalo, N. Y., CA **$889,200**, heating and ventilating Public Library (Buffalo, N. Y.);
Lang Electric Co., 273 Oak St., Buffalo, N. Y., CA **$767,000**, electrical work for Public Library (Buffalo, N. Y.)

▲ **Koppers Co., Inc., Bldg. Dpt.**, Koppers Bldg., Pittsburgh, Pa., CA Est. **$3,000,000**, replacing 50 COKE OVENS, BUFFALO, N. Y. Donner-Hanna Coke Corp., Abby and Mystic Sts., Buffalo 20, N. Y. CD 6/20/50.

▲ **Mars Assocs., Inc., & Normel Constr. Corp.**, 271 Church St., New York 13, N. Y., LB **$2,447,000**, (4 bidders), general contract JUNIOR HIGH SCHOOL 2, Midland, Bedford and Roundary Aves., Richmond Boro, MIDLAND BEACH, N. Y. Deputy Supt. Schools, Bureau Constr., 42-15 Crescent St., 4 Floor, Long Island City 1, N. Y. Bids Dec. 28. CD 12/15;
H. Sand & Co., 11 Park Pl., New York 7, N. Y., LB **$448,970**, (3 bidders), heating and ventilating Junior High School 2, Richmond Boro (Midland Beach, N. Y.).

▲ **George A. Fuller Co.**, 597 Madison Ave., New York 22, N. Y., CA Over **$3,000,000**, SCHOOL, CHAPEL and CONVENT, west of Second Ave. between East 64 and East 65 Sts., NEW YORK, N. Y. Grace Institute, 149 W. 60 St., New York 23, N. Y. Weinberger, Frieman, Leichtman & Quinn, 20 Vesey St., New York 7, N. Y., structural engrs. Cosentini Assocs., 10 Columbus Circle, New York 19, N. Y., mechanical engrs. CD 10/10.

▲ **Glickman Corp.**, 565 5 Ave., New York 17, N. Y., Owner Builds, **$3,515,066**, 20 story APARTMENT, 487 Ave. of Americas between W. 12 and 13 Sts., NEW YORK, N. Y. H. I. Feldman, 415 Lexington Ave., New York 17, N. Y., archt. Robert Rosenwasser, 375 5 Ave., New York 16, N. Y., structural engr. E. U. Markush, 443 Park Ave. S., New York 16, N. Y., mechanical engr.

▲ **Senville Realty & Constr. Co.**, 360 Lexington Ave., New York 17, N. Y., Owner Builds, **$2,800,000**, 21 story APARTMENT, westside of Avenue of Americas

from W. 56 to 57 Sts., NEW YORK, N. Y. Schuman & Lichtenstein, 360 Lexington Ave., New York 17, N. Y., archts. CD 1/14.

▲ **Lehigh Constr. Co.**, 735 Park Ave., Plainfield, N. J., CA Est. **$3,000,000-$4,000,000**, 320-unit APARTMENT, Third River, BELLEVILLE, N. J. Krugman & Di Petro, 1330 Main Ave., Clifton, N. J. Gerber & Pancani, 11 Commerce St., Newark, N. J., archts. Anthony Mazzucca, 917 St. Marks Ave., Westfield, N. J., engr.

▲† **J. W. Bateson Co., Inc.**, P. O. Box 13307, Walnut Hill Station, Dallas, Tex., CA **$26,301,400**, FEDERAL OFFICE BLDG. 10-A and 10-B, Independence Ave. between 6th and 8th Sts. S. W., WASH., D. C. General Services Admin., 7th and D Sts. S. W., Wash. D. C. CD 12/22, under LB.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

January 17 West Virginia — January 20 Kentucky
January 20 Kentucky & Indiana — January 24 Mississippi
January 24 North Carolina — February 8 Virginia

STREETS AND ROADS

January 17 West Virginia — January 20 Kentucky
January 24 Mississippi, North Carolina
February 8 Virginia

BUILDINGS—SLC

▲ **Fla., Tampa**—MOTOR HOTEL—Tampa International Inn, c/o Morris Lapidus, Harle & Liebman, archts., 940 Lincoln Rd., Miami Beach, soon lets contract 170 unit motor hotel, swimming pool. $2,000,000. Oboler & Clarke, 925 Arthur Godfrey Rd., Miami Beach, engrs.

HEAVY CONSTRUCTION—LB & CA

▲ **VIRGINIA**—Dpt. Hys., 1221 E. Broad, Richmond,
Va.—**Thompson-Arthur Paving Co.**, 300 Benbow Rd., Greensboro, N. C., CA **$873,646**, 2.848 mi. 2 lanes b. conc. pavement from .072 mi. north int. Alternate Rte. 29 and 0.265 mi. south Va. N. C. line, Proj. 0029-108-070, C501; 0029-071-104, C501; NC Proj. 8.15137 U-UG-109-1(1); F-018-1(9); F-38(9), Pittsylvania Co., Va. and Caswell Co., N. C.;
Va.—**Oman Constr. Co.**, Acklen Park, Memphis Hy., Nashville, Tenn., CA **$2,371,404**, est. $2,369,804, grading, paving east section Marion bypass on Rte. 81. Proj. 0081-086-003, G304, B641, B642; 0081-086-003, G305, B643, B646; 0689-086-105, C501. Bids Dec. 21, awarded Dec. 30. CD 12/29, under LB.

▲ **FLORIDA**—State Road Dpt., Tallahassee,
Fla.—**Wright Contr. Co.**, Box 1580, Columbus, Ga., CA **$1,869,261**, grading, 8-lane divided plain c. conc. pavement, storm sewers, 3 dual grade separation bridges, conc. deck, prestressed conc. beams on conc. piers founded on prestressed conc. piling, aluminum handrail, roadway lighting, fencing, approx. 1.521 mi. Federal Aid Interstate Proj. No. I-95-1(27)8 Job No. (87270-3411) SR 90A, between N.W. 95th St. and N.W. 119th St., Dade Co.;
Fla.—**Al J. Capeletti, Inc.**, Box 1147, Hialeah, Fla., CA **$1,973,859**, grading, 6-8 lane divided 9 in. plain conc. pavement, constructing 3 dual grade separation bridges, conc. deck, prestressed conc. ibeams supported on conc. piers founded on prestressed conc. piling aluminum handrail roadway lighting, fencing, approx. 1.018 mi. Federal Aid Interstate Proj. No. I-95-1(29)10 (Job No. 87270-3414), SR 9A, between 119th St. and 135th St. in North Miami. Awarded Dec. 29.
Fla.—**Powell Bros., Inc.**, Box 281, Fort Lauderdale, Fla., CA **$1,474,495**, four-lane limerock base, Type 1, b. conc. surf. with binder course, Type 1-B surf. treat, 189 ft. four-lane bridge of prestressed conc. slab units on prestressed conc. pile bents, aluminum handrail, guardrail, 354 ft. bridge with electrically-operated double-leaf bascule span, conc. piers founded on steel piling, two flanking spans of conc. slab deck steel I-beams, two approach spans of conc. slab deck and prestressed conc. beams on prestressed conc. pile bents having conc. and aluminum pipe handrail, bridge roadway and navigation lighting, treated timber fender system, conc. sheet pile bulkheads, approx. 1.731 mi., State Proj. job No. 86600-3175, SR S-822, Sheridan Drive in Hollywood from SR 5 to SR S-1AA, Broward Co. Grand total $5,317,615. Bids Dec. 28, awarded Dec. 20. CD 12/15, under LB.

▲† **Hendry Corp.**, 5107 S. West Shore Blvd., Tampa 11, Fla., CA **$3,291,210**, modify and deepening entrance channel and turning basin at Port Everglades Harbor, near Fort Lauderdale, CIVENG-08-123-61-34, FLORIDA. U. S. Eng., 575 Riverside Ave., Jacksonville, Fla. Bids Dec. 21. CD 12/28, under LB.

▲† **R. E. Clarson, Inc.**, 1930 13th Ave. North, St. Petersburg, Fla., CA **$1,740,170**, Precision Trajectory Measurement System, Patrick Air Force Base, ENG-08-123-61-30, COCOA, FLA. U. S. Eng., P. O. Box 4970, Jacksonville, Fla., Bids Dec. 20, awarded Dec. 27. CD 12/29, under LB.

▲ **LOUISIANA**—State Dpt. Hys., Rm. 426, Headquarters Admin. Bldg., Baton Rouge,
Flenniken Constr. Co., Box 650, Lake Charles, La., CA **$3,338,575**, c. conc. pavt. grade separation structures 5.825 mi. Lake Charles-Welsh Hy. (East of Chloe-US 165) SP Nos. 450-02-26 and 450-03-05 FAP No. I-10-1(25)38, Calcasieu and Jefferson Davis Parishes. Bids Nov. 30. CD 12/5, under LB.

▲ **Ross Corp.**, 315 N. Broad St., New Orleans, La., LB **$1,789,000**, (2 bidders) rehabilitation Workhouse No. 1 and annexes, incl. mechanical structural and electrical alterations at Public Grain Elevator, NEW ORLEANS, LA. Port of New Orleans, No. 2 Canal St., New Orleans, La. Bids Dec. 21 CD 11/30.

▲ **KENTUCKY**—Commonwealth of Ky., Dpt. Hys., Frankfort,
R. **B. Tyler Co.**, 1446 Levering St., Louisville, Ky., CA **$2,314,490**, c. conc. 4.548 mi. Covington-Lexington. I 75-8(13)181, Kenton Co. Bids Dec. 16, awarded Dec. 29. CD 12/21, under LB.

BUILDINGS—LB & CA

▲ **Rea Constr. Co.**, P. O. Box 1092, Charlotte, N. C., CA **$3,051,650**, general contract 3 story, 200 sq. ft. LEGISLATIVE BLDG., RALEIGH, N. C. North Carolina State Legislative Comn., P. O. Box 1351, Raleigh, N. C. Bids Dec. 14. CD 12/21, under LB.
Bolton Air-Conditioning & Heating Co., P. O. Box 2714, Raleigh, N. C., CA **$637,591**, heating and air-conditioning contract, 3 story, 200,000 sq. ft. legislative bldg. (Raleigh, N. C.).

▲ **Chemical Constr. Corp.**, 52 W. 42 St. New York, N. Y. CA design and construct phosphoric acid and triple superphosphate PLANT, FORT MEADE, FLA. Armour Agricultural Chemical Co., 10 and State Sts., Chicago, Ill. Total cost **$30,000,000.** Rust Engineering Co., 930 Ft. Duquesne Blvd., Pittsburgh, Pa., engr.
Titlestad Corp., 521 5th Ave., New York, N. Y. CA design and construct 2 sulphuric acid plants, (Fort Meade, Fla.);
Rust Engineering Co., 930 Ft. Duquesne Blvd., Pittsburgh, Pa., CA office and service facilities, (Fort Meade, Fla.).

▲ **Chemical Constr. Corp.**, 52 W. 42 St., New York, N. Y., CA Ammonium Phosphates PLANT, CHEROKEE, ALA. Armour Agricultural Chemical Co., 10 and State Sts., Chicago, Ill., CD 12/12, under CA;
Chemical & Industrial Corp., 256 McCullough St., Cincinnati, O. CA nitric acid plant, solutions plant and ammonium plant, (Cherokee, Ala.).

▲ **Wehr Constructors, Inc.**, 2127 S. Floyd St., Louisville, Ky., CA **$2,792,313**, MEDICAL DENTAL RESEARCH, Floyd St. between Walnut and Madison Sts., University of Louisville, LOUISVILLE, KY. University of Louisville, 3 and Shipp Sts., Louisville, Ky. Bids June 28, awarded Dec. 20. CD 7/1, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

January 31 Ohio

STREETS AND ROADS

January 31 Ohio

▲ **O., Massillon**—BA 1/25—City, City Hall, Contract 2, sewage plant imprvs., two pre-aeration-primary tanks, two digesters, digester control bldg., filter bldg. $2,000,000. Plans deposit $30. Floyd G. Browne & Assocs., 125 W. Church St., Marion, engrs. CD 12/2.

BUILDINGS—BA

▲ **O., Reading**—HIGH SCHOOL—BA 1/25—Bd. Educ., high school. $11,500,000. Plans deposit $50. Sullivan, Isaacs, Sullivan, 1800 Reading Rd., archts-engrs. CD 11/9/59.

▲ **Wis., Madison** — ADMINISTRATION-HOSPITAL—RESEARCH—BA 2/16—State Dpt. P. Welfare, administration-hospital and research, Central Wisconsin Colony and Training School. $2,000,000. Plans deposit $50. Karel Yasko, state archt. R. D. Culvertson, state engr. CD 5/25.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., State Depts. Bldg., Columbus, Zone 15. Bids opened 12/13,
O.—**W. L. Johnson Constr. Co. & Assocs.**, P.O. Box 6688, Bexley Sta., Columbus, O., LB **$2,141,598**, est. $2,522,000 (12 bidders), Type T 71 and structures 4.618 mi. USR 30-6.66, US Rte. 250-5.48 F 12(2) F 1072(2), Proj. 785, Wayne Co.; LB **$1,977,247**, est. $2,415,200 (12 bidders), Type T 71 and structures 8.588 mi., US Rte. 21-11.49, 0.00 (City of Massillon), Proj. 800, Stark and Wayne Counties;
O.—**Baker & Hickey Co. and Chapin & Chapin, Inc.**, 2170 Eakin Rd., Columbus, O., LB **$3,505,778**, est. $3,701,200 (5 bidders), Type T 61 and structures, 2.456 mi., US Rte. 30-33.86, U-UG-457(10) (City of East Liverpool), Proj. 778, Columbiana Co.;
O.—**A. J. Baltes, Inc.**, 11 Olive St., Norwalk, O., LB **$2,570,640**, est. $2,939,000 (7 bidders), Type T 71 and structures 4.83 mi. US Rte. 6-7.31, F-FG 1042 (6), Proj. 779, Erie Co.;
O.—**C. F. Replogle**, P.O. Box 308, Circleville, O., LB **$3,147,383**, est. $3,500,300 (8 bidders), Type T 71 and structure 6.016 mi. US Rte. 21-10.94 I 77-2 (3)47, Proj. 780, Guernsey Co.;
O.—**Foley Constr. Co.**, 5050 Orchard St., Cincinnati, O., LB **$2,369,481**, Alt. LB **$2,372,097**, est. $2,828,000, Type T 71 and structures 0.619 mi. US Rte. 50-20.81, I 71-1(17)00 (City of Cincinnati), Proj. 781, Hamilton Co.;
O.—**Fischer Constr. Co.**, 10147 Springfield Pike, Cincinnati, O., LB **$1,805,028**, est. $2,237,000 (10 bidders), Type T 71 and structure 2.609 mi. US Rte. 52-6.25, I 74-1(5)05, Proj. 782, Hamilton Co.;
O.—**Codell Constr. Co.**, 125 Main St., Winchester, Ky., LB **$5,163,477**, est. $4,968,000 (5 bidders), Type T 71, structures 4.859 mi., US Rte. 52-7.90, U-F-393(10) (City of Ironton) (Village of Coal Grove), Proj. 783, Lawrence Co.;
O.—**Fischer Constr. Co.**, 10147 Springfield Pike, Cincinnati, O., LB **$1,560,640**, est. $1,804,200, (12 bidders), Type T 71 structures 3.461 mi. US Rte. 40-0.00 (and USR No. 35) I 70-1(8)00, Proj. 784, Preble Co. CD 11/28.

▲ **INDIANA**—State Hy. Dpt., State Office Bldg., Indianapolis,
Ind.—**Calumet Paving Co.**, 96th and Zionsville, Rd., Zionsville, Ind., CA **$1,839,556**, c. conc. pavement, Contract R 5197,
Ind.—**George M. Eady Co. & Codell Constr. Co.**, 340 Byrne St., Louisville, Ky., CA **$1,642,112**, c. conc. pavement Contract R 5198;
Ind.—**Berns Constr. Co.**, 312 E. Washington St., Indianapolis, Ind., CA **$1,346,212**, c. conc. pavement, Contract R 5199;
Ind.—**Ryan Constr. Co.**, 800 E. Michigan St., Evansville, Ind., CA **$1,731,815**, c. conc. pavement, rein.-con. structure, Contract R 5202. Grand total $6,559,695. Bids Dec. 20, awarded Dec. 28. CD 12/29, under LB.

▲ **Crane Constr. Co.**, 201 E. Walton St., Chicago, Ill., CA **$13,500,000**, twin 27 story APARTMENTS, Addison St. and Brompton Pl. and Lake Shore Dr., CHICAGO, ILL. John J. Mack & Ray Scher, 201 E. Walton St., Chicago, Ill. Loewenberg & Loewenberg, 120 S. LaSalle St., Chicago 3, Ill., archts.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

January 17 Iowa, Kansas — January 19 Wyoming
January 20 Minnesota

STREETS AND ROADS

January 17 Colorado, Iowa, Kansas
January 19 Wyoming — January 20 Minnesota

▲† **South Dakota**—BA 2/2—U. S. Eng., 215 North Seventeenth, Omaha, Neb., furnish intake and draft tube gates, frames and guides for Big Bend Dam, Fort Thompson, CIVENG-25-066-61-73. $3,000,000. Plans deposit $1.50. CD 9/20.

▲† **Missouri**—BA 2/7—U. S. Eng., 420 Locust St., St. Louis Zone 2, pumps, motors, switchgear and substation, incl. 4 storm water pumping units, 4 base flow pumping units, 2 sump pumping units, multiple shutter gates, etc. St. Louis. CIVENG-23-065-61-42. Over $1,000,000. CD 9/21.

▲† **Oklahoma**—BA About 2/9—U. S. Eng., Box 61, Tulsa, relocating Oklahoma Hy. No. 9, Canadian River Section, grading and bridge, Eufaula Reservoir, Canadian River, CIVENG-34-066-61-52, $3,000,000. CD 9/30.

▲ **Tex., Dallas**—BA 2/27—City, City Hall, White Rock sewage treatment plant imprvs., rein.-con. settling tank, sew. and sl. pump, equipment, piping, etc. and 1 story, addn. to adm. bldg., 55 x 27 ft., brick, concrete blk. bltup roof., Sargent Rd. $2,330,000. Plans deposit $10. Extended date. CD 12/16.

BUILDINGS—BA

▲ **Tex., Dallas**—SCHOOLS—BA 1/24—Dallas Ind. Schol Dist., 1 story, with one 3 story wing, 127, 735 sq. ft. brick, tile, concrete T. W. Brown Junior High School on J. F. Kimball School site, $1,800,000. Plans deposit $25. Fred Buford & Associates, 500 Interurban Bldg., Dallas, Tex., archts. CD 9/22.

HEAVY CONSTRUCTION—LB & CA

▲ **ARKANSAS**—State Hy. Dpt., State Capitol, Little Rock,
Ark.—**T. L. James & Co., Inc.**, Box 531, Ruston, La., CA **$2,444,650**, 11.198 mi. Interstate Hy. 55, Job 1335, Crittenden and Mississippi Counties;
Ark.—**Gillioz Co., Inc.**, P. O. Box 20, Monett, Mo., CA **$621,656**, 13.029 mi. State Hy. 74, Job 9441, Madison County. Bids Dec. 14. CD 12/20.

▲† **Hitachi New York Ltd.**, 501 Fifth Ave., New York 17, N. Y., LB **$2,783,592**, (6 bidders), four 51,800 horsepower turbines for Dardanelle Dam, Yell Co., CIVENG-03-050-61-32, ARKANSAS. U. S. Eng., Gay Bldg., Little Rock, Ark. Bids Dec. 29. CD 11/29.

▲ **MONTANA**—State Hy. Comn., Helena,
Mont.—**Bud King Constr. Co.**, Missoula, Mont., and **McLaughlin, Inc.**, Ford Bldg., Great Falls, Mont., CA **$3,134,965**, grading, gravel, plant mix bit. surf. 11.823 mi. double lane hy. from 3 mi. east of Livingston, extending west around city, Park Co.;
Mont.—**Albert LaLonde Co.**, Sidney, Mont., CA **$325,784**, grading, aggreg. surf., plant mix bit. surf. 5.489 mi. Fairview-Girard Rd., Richland Co. Bids Dec. 12/21. CD 12/28, under LB.

▲ **U. S. Eng.**, 1519 S. Alaskan Way, Seattle 4, Wash., rejected bids Dec. 13, Minuteman Ballistic Missile Complex, Malmstrom Air Force Base, ENG-04-548-61-1, GREAT FALLS, MONT. LB **$78,907,000**. New bids may be asked on revised plans or contract may be negotiated. CD 12/15, under LB.

BUILDINGS—LB & CA

▲† **Electronic & Missiles Facility, Inc.**, 2 Lafayette St., New York, N. Y., LB **2,067,000** est. 1,879,400 Sched. 1, Second Increment of First Regimental Area, First Battalion Facilities to incl. 2 EM BARRACKS, CONSOLIDATED MESS, ADMINISTRATIVE and STORAGE BLDG. and site imprvts.; LB **$366,000**, est. $373,370 Sched. II, 600 seat CHAPEL, ENG 23-208-61-39, FORT LEONARD WOOD, MO. U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo. Bids Dec. 22, CD 11/23.

▲ **United Carbon Co.,** First City National Bank Bldg, Houston, Tex., rejected bids Dec. 22, RESEARCH CENTER and OFFICE, ADDICKS, TEX. **$2,500,000.** CD 11/30.

▲ **Ira Berne,** 2214 Maroneal St., Houston, Tex., Owner Builds, **$5,500,000,** 250 town HOUSES, W. Bellfort and Chimney Rock Rd., HOUSTON, TEX. Wm. F. Wortham, Jr., 2214 Maroneal St., Houston, Tex., archt.

▲ **Wm. G. Farrington & Co.,** 1661 Tanglewood St., Houston, Tex, Owner builds, **$1,900,000,** SHOPPING CENTER, Westheimer Rd., HOUSTON, TEX. CD 3/23/59.

▲ **Kickirillo Building Co.,** 1719 Imperial Crown St., Houston, Tex., Owner Builds, **$1,672,000,** 44 DWELLINGS, Sec. 1, Fown Villas Subdivisions; **$2,183,000,** Sec. 2, 59 DWELLINGS, Fown Villas Subdivision, HOUSTON, TEX.

▲† **Knutsorr Constr. Co.,** 2138 Welch St., Houston, Tex., CA **$3,882,500,** 124,000 sq. ft. HOSPITAL ADDN., HOUSTON, TEX. U. S. Veterans Admin., Munitions Bld., Wash. D. C. CD 12/22, under LB.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

January 24 Washington

STREETS AND ROADS

January 24 Washington February 1, 15 California

HEAVY CONSTRUCTION—LB & CA

▲† **Yuba Consolidated Industries, Inc.,** 351 California St., San Francisco, Calif., CA steel work for underground missile silos, at Titan II Installation, Davis-Monthan Air Force Base, TUCSON, ARIZ. U. S. Eng., Ballistic Missile Constr. Office, 9610 Bellanca Ave., Los Angeles, Calif. CD 12/2, under CA.

▲† **Kirst Constr. Co., 836 W.** Woodbury Rd., Altadena, Calif., CA **$1,823,159,** constr. work on Los Angeles Drainage Area near San Fernando, CIVENG 04-353-61-109, CALIFORNIA. U. S. Eng., 751 South Figueroa St., Los Angeles, Calif. Bids Dec. 21. CD 11/29.

▲† **Franks Dredging,** P. O. Box 227, Long Beach, Calif., CA **$2,297,440,** dredging for carrier berth facility, Naval Air Station, North Island, Spec. 25397, SAN DIEGO, CALIF. 11th Naval Dist. P. Wks., 1220 Pacific Hy., San Diego, Zone 1, Calif. Bids Dec. 22, awarded Dec. 28. CD 12/28, under LB.

▲ **San Francisco Port Auth.,** Ferry Bldg., San Francisco, Calif., rejected bids Dec. 19, First Phase, dredging, sand and rock facing, seawall for Port Terminal Proj., SAN FRANCISCO, CALIF. LB **$17,329,830.** Will revise plans. CD 12/27, under LB.

BUILDINGS—LB & CA

▲ **Johnson, Drake & Piper, Inc.,** 4821 Tidewater Ave., Oakland, Calif., CA excav., water conduits, piling and pedestal fdns. for turbo generator, Morro Bay POWER PLANT addn., CALIFORNIA. Pacific Gas & Electric Co., 245 Market St., San Francisco 6, Calif. CD 4/29.

▲ **Cahill Constr. Co.,** 350 Sansom St., San Francisco, Calif., CA Est. **$2,500,000,** 1 story, 235,000 sq. ft. GLASS FABRICATING PLANT, OFFICE, WAREHOUSE, BRISBANE, CALIF. Braun-Knecht-Heimann Co., Div. Van Waters & Rogers, Inc., 1400 16 St., San Francisco, Calif. J. F. Ward, 215 Leidesdroff St., San Francisco, Calif., archt.

▲ **Haas-Haynie Corp.,** 8913 Olympic Blvd., Beverly Hills, Calif., CA **$2,098,000,** concrete block MANUFACTURING PLANT, 15825 Roxford St., VAN NUYS, CALIF. Bendix Corp., c/o Welton Becket & Assoc., archts., 10,000 Santa Monica Blvd., Los Angeles, Calif. Awarded Dec. 20.

▲ **Campbell Constr. Co.,** 800 R St., Sacramento, Calif., CA **$1,912,950,** 1000 student Fern Bacon JUNIOR HIGH SCHOOL, SACRAMENTO, CALIF. Sacramento City Unified School Dist., 1619 N St., Sacramento, Calif. Bids Nov. 14. CD 11/18, under LB.

CANADA

BUILDINGS—BA

▲ **Ont., Ottawa**—PARLIAMENT BLDGS.—BA 2/1—Dpt. P. Wks., Hunter Bldg., West Block Parliament Bldgs. alterations, addns., $6,000,000. Extended date. E. A. Gardner, Tupper Bldg., ch. archt. CD 12/5.

▲ **Ont., Ottawa**—HEALTH and WELFARE OFFICE—BA 3/1—Dpt. P. Wks., Hunter Bldg., 15 story, concrete, steel, precast concrete, granite stone, Dpt. of Health & Welfare Office. $4,500,000. Plans deposit $300. Balharrie, Helmer & Morin, 77 Metcalfe St., archts. Greenspoon, Freedlander & Dunne, 4151 Sherbrooke St. W, Montreal, Que., assoc. archts. CD 3/8.

HEAVY CONSTRUCTION—LB & CA

▲ **Dufresne Engineering Co.,** 1832 Pius IX Blvd., Montreal, Que., CA Total est. **$30,000,000,** hydro electric power proj., incl. diversion dam, two sluice gates, 20 stoplog sections, 4 earth dams, canal, steel penstocks and power house at Twin Falls, LABRADOR. Twin Falls Power Corp., Ltd., sub British Newfoundland Corp., Ltd., 1980 Sherbrooke St. W., Montreal, Que. Shawinigan Engineering Co., Ltd., 635 Belmont St., Montreal, Que., engrs.

The world-wide respect and demand for this original Miller gas engine driven welder/power plant has never been greater. To this established popularity has now been added the convenience of Bendix drive electric starting as optional equipment on models AEA-200-L and AEA-200. Model illustrated and headlined is AEA-200-LE.

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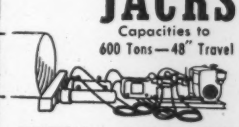
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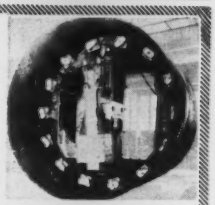
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BUILDINGS—LB & CA

▲ **Perini Western Ltd.**, 201 Insurance Bldg., Edmonton, Alta., CA Est. **$3,000,000**, 11 story air conditioned OFFICE, Jasper Ave., EDMONTON, ALTA. Edmonton Professional Arts Bldg., Ltd., c/o Gerald Hamilton & Assocs., archts., 1350 Pender St., Vancouver, B. C. Read, Jones, Christofferson & Crowther, 11536 Jasper Ave., Edmonton, Alta., engrs. CD 4/4.

▲ **Assaly Constr. Ltd.**, 549 Gladstone Ave., Ottawa, Ont., Owner Builds, **$6,500,000**, three 17 story APARTMENTS, enclosed glassdomed mall, OTTAWA, ONT. CD 1/31/58.

PUERTO RICO

BUILDINGS—BA

▲† **Puerto Rico, Fort Allen**—HOUSING—BA 2/9—U. S. Eng., P. O. Box 4970, Jacksonville 1, Fla., 150 units Capehart Housing, ENG-08-123-61-40. $2,170,100. CD 12/28.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ **NICARAUGA**—Bureau P. Rds., Dpt. Commerce, Inter-American Hy. Office, 18 and F Sts. N. W., Wash., D. C. U. S. A.,

Nello L. Teer Co. of Central America, P. O. Box 1131, Durham, N. C., U. S. A., CA **$2,046,395**, 14 mi. grading, drainage, special subbase Rama Rd. Proj. R-3D, End Proj. R-3B to Siquia River. Bids Dec. 15. CD 12/29, under LB.

BUILDINGS—LB & CA

▲ **Secretaria del Instituto Salvadoreno del Seguro Social**, 4a Avenida Norte No. 132, San Salvador, cancelled bids. HOSPITAL, OFFICE, INFIRMARY, HOSPITAL, water tanks, SAN SALVADOR, EL SALVADOR. **$3,600,000**. Will re-advertise. CD 11/4.

FOREIGN

HEAVY CONSTRUCTION—BA

▲ **Denmark, Hantsholm**—BA 2/1—Ministeriet for Offentlige Arbejder, Slotsholmsgade 10, Copenhagen, First Stage, outer and cross jetties, inner harbor, filling and dredging. Total est. $15,000,000. CD 3/2.

▲ **Spain, Barcelona** — DRY DOCK — BA 4/27 — The Secretaria de Obras y Servicios del Puerto de Barcelona, Puerto de la Paz s/n, Barcelona, dry dock, Barcelona's Harbor. $5,000,000. Plans deposit $50. CD 5/18.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Mich., Detroit**—Wayne County Rd. Comn., 728 City-County Bldg. Zone 26, water supply mains, Rockwood, Taylor and Romulus. $11,500,000. Constr. to start in 1961. CD 4/12/55.

SEWERS, WASTE DISPOSAL

▲ **Conn., East Haven**—Town, Town Hall, sewerage system, Plan C, Foxon Area, $2,000,000; sewerage system, Plan D, Route 80 Area, $2,000,000, Bowe, Albertson & Assocs., 75 West St., New York, N. Y., consult. engrs. CD 8/25.

▲ **Ill., Chicago**—Bd. Comrs. Cook Co., County Bldg., Zone 2,

110—pumping station and main drain, 1.99 mi., Palatine Rd., Wheeling Rd. to Des Plaines River, Arlington Heights, $600,000.

E-26—drain. utilities, gravel and pave, Southwest Express, Harlem to La Crosse, Chicago, $2,800,000.

E-38—main drain, Stony Island Express C. & I. R. R. to 103rd St., Chicago, $900,000.

126—storm sewer, Dempster-Thacker St., Des Plaines, $525,000.

116—storm sewer, Glenview Rd., Greenwood Ave. to Waukegan Rd., 2.1 mi., Glenview, $150,000.

139—storm sewer, Lawrence Ave., Des Plaines River to Harlem Ave., 2.43 mi., Norridge, $500,000.

227—storm sewer and land bridge, Hintz Rd., Elmhurst Rd. to Wheeling Rd., 0.5 mi., Wheeling, $300,000. Constr. 1961. CD 1/14.

STREETS AND ROADS

▲ **Ill., Chicago**—Bd. Comrs. Cook Co., County Bldg., Zone 2,

110—paving, road reconstr., 1.97 mi. Arlington Heights Rd., Arlington Heights, $251,000.

145—resurf., draining, 1.1 mi. North Lake Shore Dr., North to Fullerton Aves., $500,000.

E-40—grading, paving, draining, Stony Island Expressway, 109th St. to south of C & WI, $2,600,000.

E-30—paving, frontage Rd. B, 103rd St., to C & W I. N. Y. C. R. R., Stoney Island Expressway, west of Stony Island Ave., $200,000.

051—widen and chan. 3 mi. Pulaski Rd., 64th to 40th Sts., grade separation, Archer Ave., $2,000,000.

051—widening, chan. 1 mi. Pulaski Rd., 72nd to 64th Sts., grade separation, 67th St., $1,190,000.

E-37—paving, Frontage Rd., Stony Island Expressway 103rd St. to C & W I and N. Y. C. R. R. east of Stony Island Ave., $200,000.

E-15—paving South Rte. Expressway, east of Cottage Grove to 109th and Doty Sts., $2,462,000.

E-14—lighting South Rte. Expressway, 96th St. to Cottage Grove Ave., $103,000.

E-7—grading, paving retaining walls, South Rte. Expressway, 63rd to 66th St., $1,233,000.

E-9—grading, paving, retaining walls, South Rte. Expressway, 66th to 69th Sts., $1,069,000.

031—widening, reconstr. and median 2.3 mi. Cumberland Ave., Irving Park Rd. to Northwest Expressway, $545,000.

055—remove columns, 900 ft. north of Cermak Rd., Lake St., 800 ft. south of Lawrence Ave., 200 ft. south of Milwaukee Ave., $1,000,000.

031—resurf. widening to 4 lanes, 2.1 mi. Greenwood Ave., Milwaukee Lake Aves., Niles, $475,000.

121—resurf., widening reconstr. 4 lane 1.58 mi. Church St., Gross Point Rx. to Central Park, Skokie, $292,000.

060A—resurf., widening to 4 lane and reconstr. 0.8 mi. Union St., Steger Rd. to Sauk Trail, Steger, $236,000.

▲ **Tex., El Paso**—El Paso Co., City-County Bldg., Trans-Mountain Rd., By-pass connecting with N-S Freeway, $7,000,000. Smith Cremans & Associates, 1627 Montana Ave., consult. engrs. Contract 1st ½ of 1961.

AIRPORTS

▲† **Pa., Phila.**—OFFICE—Dpt. Navy, Phila. Naval Base, plans by Ballinger Co., 1625 Race St., office, conversion from warehouse bldg., Naval Air Supply Depot. $2,000,000. Bids about early 1961. CD 9/20/51.

UNCLASSIFIED

▲ **N. Y., Saratoga Springs**—SWIMMING POOLS; etc.—State Dpt. Conservation, State Campus Site, Albany, swimming pools, golf course, pavilion, Saratoga Springs State Park. $2,700,000.

PUBLIC BUILDINGS

▲ **Md., Baltimore** — JUNIOR COLLEGE, etc. — City, Bureau Bldg. Constr., 410 Municipal Bldg., Zone 2, plans by Hopkins & Pfeiffer, 10 E. Mulberry St., Zone 2, Junior College, Liberty Heights Ave. and Western Md. R. R., $3,900,000; plans by John Winthrop Walcott, 10 W. 25 St., Baltimore 18, Md., 1-2 and 4 story, rein.-con., concrete blocks, brick, Lexington Terrace Elementary School, Lexington St. and Myrtle Ave. $1,100,000. Raughley L. Porter, c/o owner, bldg. constr. engr.

▲ **Mich., St. Clair Shores**—SCHOOLS—Lakeshore School Dist., bond election Feb. 7, schools addns., elementary school and Junior High School. $3,900,000.

▲ **Mo., St. Louis**—HOUSING—St. Louis Housing Auth., 2031 Olive St., Zone 3, plans by Murphy & Mackey, 6124 Enright Ave., Zone 12, four 8 story, thirty 2-3-4 story apartments, 2 story office, parking facilities, Grand, Delmar and Page Blvds. and Compton Ave. Proj. MO-1-9. $16,000,000. Start early 1962. CD 1/19/59.

▲† **Nev., Reno**—COURTHOUSE and FEDERAL OFFICE—General Services Admin., 19th and F Sts., N. W., Wash. D. C., plans by Lockard, Casazza & Parsons and Associates, 232 W. 1st St., 80,630 sq. ft. courthouse and federal office, $4,000,000. CD 2/4.

▲ **Pa., New Cumberland**—SCHOOLS—West Shore Joint School Dist., New Cumberland, Pa., Cedar Cliff High School addn., $500,000; Secondary School, Red Land area, New Cumberland R. D. 1, $2,500,000.

▲ **Pa., Norristown**—WOMEN PATIENTS—Dpt. P. Welfare, Health & Educ. Bldg., Harrisburg, plans by Paul Henon, 1608 Fox Bldg., Phila., Zone 3, design women patients bldg., Norristown State Hospital, $2,058,000. CD 4/5.

▲ **Tex., Galena Park**—SCHOOL—Galena Park Ind. School Dist. plans by Lightfoot-Burleson & Associates, 4014 Mount Vernon St., Houston, high school, North Shore area, $2,000,000. Harold B. Horton, 5008 Almeda, and Jerold L. Davis & Associates, 9240 Kinnilworth St., Houston, consult. engrs. CD 8/1.

▲ **Man., Winnipeg**—POLICE STATION—City, City Hall, plans by Libling, Michener & Assocs., 138 Portage Ave. E., Police Station, southeast of Disraeli Freeway, $4,250,000. CD 9/17/59.

▲ **Que., Quebec City**—REHABILITATION CENTRE—Dpt. P. Wks., Parliament Bldgs., Quebec City, plans by Blatter, Caron & Cote, 925 St. Louis St., and Gerard Venne, 50 St. Jean St., Rehabilitation Centre, Hamel Blvd. $3,000,000. CD 6/20.

COMMERCIAL BUILDINGS

▲ **Calif., Belmont**—APARTMENTS, etc.—Davey-Arbor-Glen Development Corp., c/o Mogens Mogensen & Assocs., archts., 14241 Chanin Ave., Burlingame, six 12 story apartments, 8 story office bldg., shopping center, $10,000,000. Bids Spring 1961.

▲ **Calif., San Jose** — MOTEL-HOTEL, etc. — Dr. Robert Carr & Assocs., 2927 Magliocco Dr., plans by DeVerne Reed Kittles, 250 Southill Rd., San Antonio, Tex., 250 unit motel-hotel, $2,250,000; 150,000 sq. ft. bank and office, $2,000,000; 60-bed hospital, $1,250,000; 250,000 sq. ft. High Rise apartment, $2,000,000; men's club, $500,000.

▲ **Calif., Santa Barbara**—HOSPITAL, etc.—The Tutor Lehrhoff Co., 13350 Riverside Dr., Sherman Oaks, 100-bed hospital and medical bldg., Hitchcock Way. $2,000,000.

▲ **Fla., Miami**—BANK-OFFICE—Miami National Bank, 8101 Biscayne Blvd., plans by Rene Brugnoni, 320 E. 54th St., New York, N. Y., 6 story, 85,000 sq. ft., bank-office addn. $3,000,000. Obler & Clarke, 927 Arthur Godfrey Rd., Miami Beach, struct. and mech. engrs.

▲ **Md., Bethesda**—DEPARTMENT STORE—Saks Fifth Ave., 5 Ave. and 49 St., New York, N. Y., plans by Abbott Merkt & Co., archts.-engrs., 630 3 Ave., New York, N. Y., 100,000 sq. ft. department store, Wisconsin Ave., Belmont Ave., Oliver and Montgomery Sts. $2,500,000.

▲ **Mich., Dearborn**—BOWLING ARENA—Detroit Bowling Club, 806 Fisher Bldg., Detroit, Zone 1, plans by J. & G. Daverman Co., 924 Grandville Ave. S. W., Grand Rapids, bowling arena, 40 lanes, restaurant, related facilities Michigan and Greenfield Aves., $2,000,000. Bids about Feb. 1. CD 12/8/60.

▲ **Mich., Farmington**—ADMINISTRATION., etc.—Mercy College, Southfield and W. Outer Dr., Detroit, Zone 36, plans by Donaldson & Meier, 16040 W. McNichols Rd., Detroit, Zone 35, administration bldg., library, fine arts, science, laboratory, dining hall, single dwellings for housing faculty, chaplains residence, Middle Belt Rd. between 11 and Twelve Mile Rds. Over $25,000,000. Constr. to start Sept. 24.

▲ **N. Y., New York**—APARTMENTS, etc.—New York University, 100 Washington Sq., Zone 3, plans by I. M. Pei & Assocs., 385 Madison Ave., 3 apartments, University Village, housing for faculty members, Houston, Bleeker and Mercer Sts., West Broadway. $15,000,000. John A. Pruyn, 10 Columbus Circle, architectural and planning consultant. CD 9/28.

▲ **N. Y., Sterling Forest**—UNIVERSITY VALLEY CAMPUS—New York University, 100 Washington Sq., New York, University Valley Campus, incl. research laboratories for physics, chemistry, botany, engineering and medicine, nuclear reactor, classrooms bldgs. for adult education and graduate study, dormitories and housing. $40,000,000. First phase in Spring.

▲ **Pa., King of Prussia**—APARTMENT HOUSE—King of Prussia Enterprises, c/o Milton Schwartz, archt., 1721 Walnut St., Phila, 600 unit apartment house, Route 202 at Valley Forge Shopping Center, $10,000,000. Bids Spring 1961.

▲ **Pa., Phila.**—HOSPITAL EXPANSION—Sisters of The Holy Family of Nazareth, Roosevelt Blvd., plans by Henry D. Dagit & Son, 1329 Race St., hospital expansion. $4,300,000. McCormick-Taylor Assoc., Suburban Station Bldg., Phila., consult. engrs.

▲ **Pa., Scranton**—SEMINARY—Our Lady of Abington, c/o Stickle & Assoc., archts., 2422 Prospect Ave., Cleveland 15, O., seminary. $6,000,000. Bids middle of January by invitation.

▲ **Pa., West Mifflin**—STORE—Sears Roebuck & Co., 2065 George, Melrose Park, Chicago, Ill., 180,000 sq. ft., Sears Store "A" type (largest), 1,000 car parking, air conditioning, elevator, 14 acres adjoining West Mifflin Plaza, $2,000,000. Constr. Spring 1961.

▲ **Tex., Dallas**—MOTEL—Chimney Rock Co., c/o Holiday Inn Center, 4070 N. Central Expressway, Dallas, 150-room motel, 4000 Blk. N. Central Expressway. $2,000,000. Bids March 1961.

▲ **Tex., Houston**—APARTMENT—Sidney L. Baxarisse & Associates, 4207 Childress St., apartment; Smith St., Walker and McKinney, $2,500,000.

▲ **Tex., Houston**—OFFICE—Bank of The Southwest, 910 Travis St., plans by Kenneth E. Bentsen, 3400 Montrose Blvd., 18 story office, McKinney and Milam Sts. $6,500,000. H. E. Bovay Jr., 5009 Caroline St., consult. engr.

▲ **Va., Norfolk**—APARTMENTS—Norfolk Dist. Methodist Foundation, Inc., Park Place, church, 34th St. and Colonia Ave., will not construct 550 unit apartments. $7,000,000. Project abandoned. CD 2/9.

INDUSTRIAL BUILDINGS

▲ **Ark., El Dorado**—PLANT—Arkansas Chemicals, Inc., (Great Lakes Oil & Chemical Co. and Houston Chemical Co.) 417 S. Hill St., Los Angeles, Calif., plant to make bromide for oil industry.

▲ **Mass., Boston**—PARKING GARAGE—Northeastern University, 360 Huntington Ave., Boston, 3 story student parking garage, Huntington Ave. $2,000,000. Constr. 1961.

▲ **Mo., St. Louis**—BREWERY ADDNS. etc.—Anheuser-Busch, Inc., 721 Pestalozzi St., Zone 18, brewery addns. incl. stock house, lager and fermenting cellars, imprvs. brewhouse, canning and bottling departments, loading docks and truck loading shipping addns., Pestalozzi St. 13 St. to Broadway. $20,000,000. Bids early 1961. Completion 1962.

▲ **Neb., Hastings**—PLANT—Consumers Cooperative Assn., 3315 N. Oak Trafficway, Kansas City, Mo., and Cooperative Chemical Assn., Lawrence, Kan., fertilizer mfg. plant, U. S. No. 6, near here. $8,000,000. Site purchased. Bids Spring 1961.

▲ **N. J., Jersey City**—GENERATING STATION—Public Service Electric & Gas Co., 80 Park Pl., Newark, N. J., electric generating station, Hackensack River north of Marion Station. $84,000,000. Completion Spring 1964.

▲ **Wash., Hoquiam**—PLANT ADDN.—Rayonier, Inc., 161 E. 42 St., New York, N. Y., steel, concrete pulp bleaching plant addn. $2,400,000. Sandwell International, Ltd., 1512 Alberni St., Vancouver, B. C., consult. engrs. Bids in March.

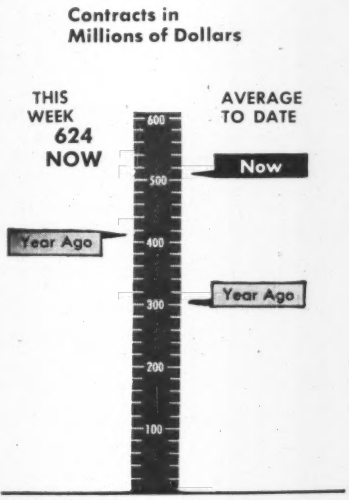
AMERICANS ABROAD

Pakistan—West Pakistan Water & Power Development Auth., The Pipals, Lower Mall, Lahore, Indus Basin Project, incl. (Unit 1) canals and bridges, Trimmu-Sidnai Link Canal from Trimmu on Chenaub River to Ravi River (Unit 2) Sidhai-Mailsi-Bahawal Link from Sidhnai on the Ravi River to the Sutlej River to Ravi River (Unit 2) Sidhai-Mailsi-Bahawal Contractors wishing to receive document for Pre-qualification submit request to consultants by Jan. 16, 1961. Tipton & Kalmbach, Inc., P. O. Box 589, Lahore, West Pakistan; and 831 14 St., Denver 2, Colorado, U. S. A., consult. engrs.

(Proposal Advertisements see pp. 64 to 66)

Construction Scoreboard

This Week . . .



AMOUNT OF CONTRACTS LET

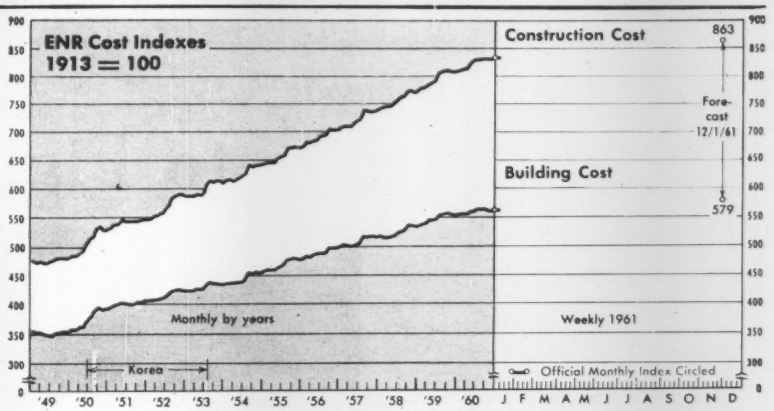
Contracts Awarded In 50 States By Type	This Week millions	Cum. 2 wks 1961	Chge '60-'61 %
All Heavy Construction	$623.9	$1,031.6	+59
By Ownership			
PRIVATE	360.1	481.5	+47
PUBLIC	263.8	550.1	+72
State & Municipal	177.1	397.4	+68
Federal	86.7	152.7	+82
By Type of Work			
PUBLIC			
Waterworks	10.8	15.0	+19
Sewerage	13.7	22.5	−22
Bridges*	16.2	30.0	+82
Highways	88.4	216.0	+110
Earthwork, Dams & Waterways	12.1	26.2	+ 9
Buildings:			
Excl. Housing	82.7	177.1	+283
Housing	15.1	21.2	−32
Unclassified	24.9	42.2	−26
PRIVATE			
Buildings:			
Mass Housing	79.0	137.8	+19
Commercial	37.0	66.7	− 2
Industrial	240.0	260.8	+121
Unclassified	4.0	16.1	−35

* Includes Private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

NEW CONSTRUCTION CAPITAL

	Week of Jan. 5 millions	Cum. 1 wk 1961	Chge '60-'61 %
Corporate Securities	$0.3	$0.3	...
State and Municipal:			
All Except Housing	42.6	42.6	−64
Housing	0.0	0.0	0
Federal Loans	5.4	5.4	+671
Federal Aid	0.0	0.0	0
Total Nonfederal	$48.2	$48.2	−60
Federal Appropriations:			
Projects in U. S.	$ 0.0	$ 0.0	0
Outside U. S.	0.0	0.0	0
Total New Capital	$48.2	$48.2	−60



ENR INDEXES (1913=100), 20-cities' average	Week of Jan. 5 1961	% Change from Dec. 8 1960	% Change from Jan. 7 1960
Construction Cost	834.38	+0.5	+2.7
Building Cost	562.97	+0.3	+1.4

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

Latest Month . . .

CONTRACTS AWARDED

	1960 Dec. (millions)	1960 12-Mos. (millions)	Percent Change from 1959 Dec.	Percent Change from 1959 12-Mos.
Total U. S. (ENR reported)	$1,875	$22,904	+17	+12
Private	779	12,097	−11	+16
Public	1,096	10,807	+51	+ 8
State and Municipal	801	8,350	+61	+16
Federal	295	2,457	+28	−13
ENR Volume Index, 1913 = 100	584	597	+34	+11

NEW CONSTRUCTION CAPITAL

Total U. S.	811	17,066	+20	− 1
State and Municipal Bond Sales	564	6,636	+32	+11
Corporate Security Sales	242	3,698	−0.8	−11
Federal Loans, Aid (nonfederal work)	3	3,507	−50	+0.7
Federal Appropriations* (federal work)	0	3,325	0	− 7

* Includes funds for outside U. S.

MATERIALS SHIPMENTS

Unit	1960 Oct. (O) Nov. (N)	1960 Cum. (No. of Mos.)	Percent Change from Year Ago Mo.	Percent Change from Year Ago Cum.
Portland Cement, Bur Mines, thous bbls	21,917(N)	297,102(11)	+ 13	− 6
Concrete Paving Awards, PCA thous sq yd	11,208(N)	98,734(11)	+111	+13
Fabricated Structural Steel, thous tons	289(N)	3,190(11)	+60	−13
Bookings, AISC, thous tons	240(N)	2,988(11)	− 8	+ 5
Reinforcing Bars, Net, AISI, thous tons	N.A.(N)	N.A.(11)		
Lumber, NLMA, mil fbm	2,117(N)	32,180(11)	− 7	− 4
Orders, mil fbm	2,394(N)	30,711(11)	− 9	− 8
Production, mil fbm	2,545(N)	32,327(11)	−12	− 1
Clay Products, Bureau of Census				
Brick, Unglazed, Common, Face, mil bri	596(O)	5,596(10)	− 9	−10
Vitrified Clay Sewer Pipe, thous tons	169(O)	1,607(10)	− 9	− 5
Structural Tile, Unglazed, thous tons	41(O)	421(10)	− 7	− 7
Asphalt Products, Bureau of Census				
Asphalt Roofing, thous sales sqs	5,951(O)	50,426(10)	−18	− 5
Asphalt Siding, thous sales sqs	101(O)	712(10)	−17	−12
Aluminum, Wrought, Net, Bur Census				
Sheet and Plate (non-heat treatable), mil lbs	90,498(O)	102,856(10)	−12	− 5
Wire and Cable, mil lbs	23,812(O)	252,135(10)	−14	− 9
Extruded Shapes (soft alloys), mil lbs	72,597(O)	697,187(10)	−17	− 7

EMPLOYMENT AND FAILURES

Contract Const Employment, BLS, thous	N.A.(N)	N.A.(11)**		
Contractor Failures, Dun & Bradstreet				
Number	228(N)	2,362(11)	+23	+24
Liabilities, thous	$16,683(N)	173,265(11)	+37	+55

** Average per month

Kennedy group recommends . . .

'Useful' Works to Fight Recession

The Kennedy Administration will take office next week armed with an economic study urging that outlays for construction, defense and foreign aid be boosted $3 billion to $5 billion above spending levels planned for fiscal 1962. It emphasizes that although the programs recommended are recession antidotes, they are also "desired for their own sake . . . should be pushed hard."

The study was prepared for President-elect Kennedy by a group headed by Paul A. Samuelson, professor of economics at MIT and author of the classic textbook, "Economics," published by McGraw-Hill.

Although the report recommends acceleration of certain construction programs, it specifically warns, "What definitely is not called for in the present situation is a massive program of hastily devised public works whose primary purpose is merely that of making jobs and getting money pumped into the economy."

Professor Samuelson calls the programs "minimal measures," economic weapons and instruments that should be considered as "first line of defense policies." The study concedes, however, that if 1961-62 had threatened to be "years of over-full-employment and excessive inflation demand, caution might require going a little easy on some of them. The opposite is in prospect."

Among the "desirable" and "first line of defense" programs are defense, foreign aid, urban renewal, health and welfare (including hospital construction), depressed areas, housing, highways, improved unemployment compensation system, and certain types of "useful public works." Grouped in the latter are water resources, post office buildings, military construction and federal buildings.

The report says that useful federal and federally supported public works programs should be "accelerated to the extent feasible without disrupting their orderly execution." This could be accomplished by "prompt additional appropriations and authorizations by the Congress . . . in most cases. Opportunities for speeding up authorized public works exist also at the state and local levels. Cooperation of all levels of government strengthens an anti-recession program."

In calling for acceleration of highway construction—"a potent near-term stimulant," because of the availability of cement capacity and labor—Professor Samuelson suggests the following:

- Relaxing contract controls over state obligations and assurance that the states' obligations will be met.
- Authorizing repayable advances to the states to meet their 10% Interstate highway matching requirements.
- Waiving the pay-as-you-go amendment, if required, to permit full apportionment of future Interstate authorizations.
- Increasing the authorizations.

ECONOMIST SAMUELSON: Useful public works "should be pushed hard."

The report places heavy emphasis on private housing, asserting "the last two recessions (1957-58 and 1954) were helped immensely by a successful program to make credit more available to residential housing."

The study expresses concern, however, that recent relaxation of credit in the housing field does not "seem this time to have been so successful in coaxing out new demand for home construction. There is perhaps some reason to fear that less can be expected from the housing area in the year ahead."

To support the qualified pessimism, the report cites "already quite low" down payments and rising vacancy rates in certain regions and for certain types of housing.

However, the report looks ahead to a great need for housing, "a few years from now when the wartime babies move into the house-buying brackets." It says, "Mortgage rates might be brought down to, say, 4½% interest, with discounts on mortgages correspondingly reduced; consideration might be given to further extended maximum amortization periods. The insurance fee for single dwellings under Federal Housing Administration programs might well be reduced from ½% to ¼%."

Other suggestions in the field include housing for the elderly and a step-up in the mortgage purchasing operation of Federal National Mortgage Association (Fannie Mae).

The report cautions that because the U.S. international balance of payments problem "inhibits certain types of activistic monetary policy," it will be necessary to push hard on specific credit programs in the housing field: "Innovation, ingenuity and experimentation with new instrumentalities will be needed in this matter. It is not reasonable to believe that the patterns earlier arrived at are the last word in feasible programming."

Professor Samuelson's so-called first line of defense outline readily grants that the economy is in a recession, but is built on the premise that the Gross National Product will show an improvement of about 2% in money terms and 1% in real terms by year-end, along with a national economy running "some 3% above the present rate."

His report, however, does not ignore the cheerless possibility that the improvement will not be forthcoming.

At this point Professor Samuelson establishes "second line of defense policies."

Biggest weapon along this line would be "a temporary tax cut." He suggests Congress could legislate a cut of 3% or 4% in the tax rate applicable to every income class, "to take effect immediately under our withholding system in March or April . . ."

And because of the "great desirability of introducing greater flexibility into tax rates, it would be highly desirable for Congress to grant to the Executive the right to continue such a reduction for one or two six-month (or three-month) periods . . . with the clear understanding that the reduction will definitely expire by the end of 1962."

Housing Report

Kennedy task force asks $1.6 billion a year

A task force report on housing and urban development—one of several reports to President-elect Kennedy in the recent weeks— recommends a program that, if enacted, would involve loans and grants of at least $1.6 billion a year. It also calls for Cabinet status for all housing and urban redevelopment activities.

The study, prepared by a group headed by Joseph P. McMurray, former head of New York State's Housing Administration, apparently contains only one new subsidy program—low-income housing. Although the report contains 87 pages, only a summary was released for publication.

Recommendations to which dollar amounts are affixed include:

- A four-year, $650-million-a-year urban renewal program, along with additional funds for urban planning grants, additional relief for displaced small businesses and general liberalization and improvement of the program.
- A $500-million-a-year college housing loan program.
- A $187.5-million-a-year program over four years for partial grants for community facilities.
- A $100-million-a-year loan program for mass transit facilities.
- A $127.5-million-a-year loan and grant program for four years for farm housing and farm sanitation.

Under the low-income housing program, Mr. McMurray calls for a subsidy program that would "encourage maximum participation by private enterprise." This might involve subsidization of low-income tenants in privately financed and owned buildings.

The community facilities section also contains recommendations to broaden project eligibility, increase funds for public works advance planning with money provided as grants, and increase the amount of grant funds for water-pollution control.

Housing for the aged would be stepped up by boosting the direct-loan program to nonprofit corporations.

Four new study commissions are also suggested. They would develop proposals for legislative or administrative action on:

- Standardization of mortgage instruments and foreclosure procedures.
- Standardization of local codes.
- Special problems of residential mortgage credit.

Controversial Head for HHFA

As the Kennedy Administration's Housing and Home Finance Administrator, Robert C. Weaver may find he's occupying one of the hottest seats in government. By its very nature the Housing and Home Finance Agency is schizophrenic: It is charged on the one hand with administering programs aimed at maintaining and improving the health of the multi-billion-dollar private housing business; on the other it must encourage, stimulate and give monetary support to a program many real estate interests think is detrimental to their health—subsidized public housing.

Mr. Weaver will be taking on the highest federal administrative post ever held by a Negro. And he may well become the first Negro Cabinet member. Should the Kennedy Administration gain congressional support for a Department of Urban Affairs, HHFA would be the logical agency to get Cabinet status.

But even without such elevation, HHFA touches upon the fortunes of many segments of the construction industry and the population in general. Established in 1947, HHFA and its subordinate units operate with a budget of $345 million.

HHFA's responsibilities cover the Urban Renewal Administration, Federal Housing Administration, Public Housing Administration, Community Facilities Administration, and the Federal National Mortgage Association (Fannie Mae). These agencies administer loans and grants for public housing and urban redevelopment and rehabilitation, insure loans on new and used sale and rental housing, and provide assistance in the secondary mortgage market.

Mr. Weaver will be no stranger to the multiplicity of problems that this agency—tangled in sociology, mores and economics—presents to any holder of the office. He started in 1933 as an aide to Interior Secretary Harold L. Ickes, later moving in as special assistant in various federal agencies—the Housing Authority, the housing division of the Works Progress Administration, National Defense Advisory Commission, War Production Board, and the War Manpower Commission.

These positions prepared him for service as New York State Rent Administrator in the administration of Averell Harriman and his most recent post as vice chairman of the New York City Housing and Redevelopment Board, a job that pays $22,500 a year. As HHFA Administrator, he will receive $21,000.

Robert C. Weaver

Mr. Weaver is the author of two books and many articles on the subject of discrimination against Negroes. He sees segregation in housing as the fundamental cause of school segregation and segregation in other areas—and not just in the South. Naturally, Mr. Weaver is an outspoken fighter for civil rights and social integration. But at least until the time he takes office, his public posture on that touchiest of all issues will be circumspect.

Asked at a recent news conference if he would favor a requirement that houses be available for sale to Negroes before FHA would insure the mortgages, Mr. Weaver replied: "I think it is a little premature to get into the technique that would be used, but certainly I favor the idea of open occupancy and nondiscrimination in housing."

A decision at a later date to move either administratively or legislatively against discrimination in the sale of houses financed under the FHA program could bring loud repercussions.

Opposition to Mr. Weaver, who is board chairman of the National Association for the Advancement of Colored People, is already developing. Sen. A. Willis Robertson (D., Va.), chairman of the Senate Banking Committee, says Mr. Weaver—holder of bachelor, master and doctorate degrees from Harvard—is not "the right man." Sen. John J. Sparkman (D., Ala.), also protests the selection. Opposition is also developing among Southern homebuilders, who see dire business consequences in their area should the U.S. push an aggressive nondiscrimination policy.

Boycott Ban Remains Unchanged

- **Hot-cargo exemption has not given anything to construction unions, says labor board official.**
- **He rules that Landrum-Griffin does not permit strikes to enforce restrictive agreements.**
- **Decision helps explain why building trades are pushing for the situs picketing bill.**

The construction industry's "hot-cargo" exemption in the Landrum-Griffin labor law gives construction unions no more rights or privileges than they had before the law was passed. All the exemption does is prevent the law from branding as illegal various kinds of construction labor agreements that impose restrictions on the contracting or subcontracting of on-site work.

That is one of the significant conclusions now emerging in the slow clarification of the new and still enigmatic labor law. And it has a direct bearing on union efforts to win congressional approval of the controversial situs picketing bill.

The negative aspects of the law have just been paraded before a National Labor Relations Board trial examiner in a labor dispute on a Corps of Engineers' project at Andrews Air Force Base in Maryland.

The dispute involved contractor violation of a restrictive labor contract clause designed to protect the work rights of plumbers in their jurisdictional dispute with laborers over the laying of nonmetallic pipe.

The clause was one of the kinds that is apparently legal under the new law. It simply phohibited signatory plumbing contractors from accepting contracts on jobs on which plumbing work, including installation of nonmetallic pipe, would be performed by another contractor using workers other than plumbers.

In its efforts to make the mechanical contractor on the Andrews job live up to the agreement, the plumbers union ran afoul of the boycott provisions of the law. It is now subject to an injunction and to an intermediate cease and desist order.

The NLRB trial examiner who issued the cease and desist order came up with three general conclusions that seem to prevail:

- Contractors and building trades unions may legally agree to restrictive, labor contract clauses that affect the contracting or subcontracting of on-site work. A typical example is a prohibition against subcontracting to a nonunion firm.
- Such clauses, however, can be enforced, if at all, only by civil action, including a breach of contract suit. Unions cannot strike to enforce them because the old law on boycotts remains in effect, and two of the leading cases—Sand Door and Denver Building Trades—still apply. Under those cases, a strike against a general contractor caught in a dispute between a union and a subcontractor is an illegal boycott, even though the boycott may seem to be justified by contractor violation of a valid hot-cargo clause.
- The right of unions to strike to get such clauses during collective bargaining has not been determined.

The impact of the law on day-to-day operations is apparent in the Andrews AFB case.

There, the general contractor for two hangars subcontracted the inside plumbing work to a mechanical contractor, who hired plumbers. It subcontracted the outside work, including drains, gas and water mains, and nonmetallic pipe, to a utility contractor who hired laborers.

The mechanical contractor operated under a labor agreement that prohibited it from working on a job unless all the plumbing work, including installation of nonmetallic pipe, would be performed by plumbers. Negotiation of the clause stemmed from a jurisdictional dispute between the plumbers and laborers over nonmetallic pipe. And it represented an attempt by the plumbers to protect the work rights they claimed.

The local plumbers union contended that the mechanical contractor was in violation of the labor contract as long as the utility contractor had a subcontract covering the outside work. It discussed the problem with the general contractor and the mechanical contractor, and threatened to withhold men from the inside job as long as the violation continued.

No changes were made in the subcontracts and the union did persuade its men not to work on the project. The general contractor then went to the NLRB, claiming violation of the boycott restrictions. The injunction and cease and desist order followed.

The union contended the dispute was with the mechanical contractor and that its refusal to furnish men was based on the "conceded breach" of the labor contract by the mechanical contractor. No boycott, it said, existed.

But the NLRB trial examiner concluded that the union's real target was the general contractor and that the union's aim was to force cancellation of the utility subcontract.

The union's action, he said, was clearly invalid under the old law and is still invalid because the new law "did not change anything." The Denver Building Trades case is just as valid now as it was before, he pointed out, and makes the union action an illegal secondary boycott.

While the labor contract provision, the examiner added, "is in itself valid as between the parties, (enforceable by civil action if at all) the union cannot enforce it by pressures" banned by the law.

The trial examiner's decision thus casts more light on the existing controversy over the situs picketing bill.

That bill would ease the boycott restrictions by nullifying the Denver case. It would give unions the right to strike to enforce a valid hot-cargo clause and, by the same token, it would effectively force contractors who work together to honor contractual commitments of that kind. In doing so, it would expose innocent contractors to the labor disputes of others.

That issue was decided two years ago by the U. S. Supreme Court in the Sand Door case. There, it was held that a hot-cargo clause is not a valid defense to a boycott.

Recently, construction unions in Bangor, Me., were told that the Denver and Sand Door cases still prevent strikes to enforce hot-cargo clauses that are valid under Landrum-Griffin. Unions must rely, a federal court said, on "voluntary compliance."

Labor in Brief . . .

• **Investment chief**—Alexander Bookstaver, a former New York banker, next week becomes director of the AFL-CIO's new Department of Investment, which seeks, among other things, to facilitate investment of union funds in government-insured mortgages. Mr. Bookstaver has been investment and real estate consultant to the Ladies' Garment Workers Union for the last four years.

• **Working on the railroads**—Harvard Professor John T. Dunlop is one of the public members of the new Presidential Commission seeking a solution to the railroad industry's work rules dispute. Mr. Dunlop is chairman of the Construction Industry Joint Conference.

• **Welding included**—The National Joint Bricklaying Apprenticeship Committee has included welding in the apprenticeship standards for bricklayers. The committee said the inclusion resulted from new trends in the use of prefabricated masonry panels that require welding to the building structural frame.

• **Digging in**—AFL-CIO unions in California have been urged not to recognize a new, independent labor organization called Tunnel and Rock Workers of America. The head of the California Labor Federation accused the group of trying to raid the laborers union which, he said, has made impressive gains for its tunnel workers.

• **High hopes**—Structural iron workers in Cleveland will reportedly demand a 30-cent wage increase—25 cents for wages and five cents for health and welfare—in 1961 negotiations. The figure is admittedly pro forma, and a union official concedes a lot will depend on what happens to construction volume.

• **Wage determinations upset**—A Nebraska state court has knocked down prevailing wage determinations by the Nebraska Department of Roads for highway jobs in two counties. Its said the department erroneously based its determinations on union wage rates which "were 50% higher than the scale paid by the majority of highway contractors in Nebraska."

AFL-CIO official sees . . .

Trend to Trade Unions for Engineers

Engineering unionism in the United States, if it is to be successful, may move in the direction recently taken by the Engineers Association at Sperry Gyroscope. EA joined the ranks of an AFL-CIO industrial union last year after leading a futile effort to find a national but independent voice for organized engineers and allied personnel in Engineers and Scientists Guild.

Speaking in St. Louis, Mo., last month, Everett M. Kassalow, research director for the AFL-CIO Industrial Union Department, suggested that successful engineering unionism will eventually become "closely related" to production and maintenance unionism within the framework of the AFL-CIO.

Mr. Kassalow conceded that the future, and even the success, of the movement is still uncertain. But he presented two general conclusions:

• The "old notion of professional individuality is bound to give way to the needs for group representation."

• The AFL-CIO will have to undergo "some structural face lifting" if it is going to make "a new and more vivid appeal to nonmanual workers."

The reason for predicting that the AFL-CIO, and its industrial unions in particular, will be a major force in the movement, Mr. Kassalow said, is this: Economic power tends to be "company and/or industry" in character. Workers must be organized along roughly parallel lines to counterbalance this. "This seems to mean that white collar workers, to be effective in a bargaining sense, must be organized in intimate relationship with existing production and maintenance workers' unions."

What Mr. Kassalow has in mind for the necessary structural changes in the AFL-CIO are a series of special union divisions at the various levels of the AFL-CIO to better serve the particular needs and identity of white collar workers.

His suggestions include separate local unions, a special conference or division at the international union level and a special department or division at the top of the labor movement. The local unions would be affiliated with their production counterparts and be an integral part of the labor movement.

This is essentially what the International Union of Electrical Workers—the union that EA joined—has started. There, the separate engineering unions in the New York area have an Engineering Council at the district level, and a similar council is planned for the international level. Sponsors of the plan hope to see another council created at the IUD level.

Mr. Kassalow's comments on engineering unionism were part of an overall picture he presented on white collar unionism in general. The enormous growth in white collar jobs and the changes in the work force, he said, have made the organization of non-manual workers one of prime concern, and perhaps even one of survival, to the AFL-CIO.

Conceding that there is no easy road to the unionization of white collar workers, Mr. Kassalow noted that a feeling of social superiority, a sense of individualism and some identification with management are among the obstacles.

He said he thinks much of this will disappear as white collar workers become more "routinized and bureaucratized," and that a "kind of group consciousness" more hospitable to unionism will emerge.

This group consciousness, he warned, must be translated into clear-cut unionism and not some vaguely concealed in-between body. "I am convinced," he said, "that one reason why some of the white collar engineering unions of the past decade collapsed was their failure to develop among their members a clear-cut acceptance that a union must act and regard itself as a union. Attempts to cover this with the notion that the organization is of a purely professional character and/or an arm of management will not stand up in the long run before aggressive management."

Contractor Sues on Misrepresentations

Owner held liable for cost of extra work caused by subsoil conditions different from those he said existed

Positive assertions made to induce a contract constitute fraud and deceit if the one who makes the assertions has reasonable cause to believe they are untrue.

The issue was raised recently in a federal case[1] that involved an owner's representations with respect to subsoil conditions. The facts under which the contractor recovered the damage he suffered were these:

On June 20, 1955, Daniels Construction Company entered into a contract with Woodmont Inc., to excavate approximately 2,500,000 cubic yards for the strip mining of an uranium ore mine in Utah for 29 cents per cubic yard. The contract pertinently provided that the contractor "is not relying upon any representations or promises of the company except those contained in this agreement." The contract also provided that "There are no previous or contemporary representations or warranties of the company or the contractor not set forth herein." The contract contained heavy penalties for failure to complete the contract on a specified date.

The first part of the work progressed as expected, but about the first of December, the contractor encountered unanticipated rock or sandstone. It indicated that it would expect additional compensation, but made no formal demands in that respect. About the middle of February, it was definitely determined that the last 60 to 90 feet of material was hard sandstone rock which could be removed only by systematic drilling and blasting. About this time, apparently both parties became concerned with the possibility that the contractor would not be able to complete the work in contract time. The contractor was concerned with the heavy penalties involved, and the Company was apparently concerned lest ore would not be available for its projected mill.

The parties then amended their original contract to provide that the contractor would concentrate on the excavation of one-half of the pit area to insure the availability of ore on the completion date and that the contractor would be allowed one day additional time for each day he completed that part of the pit area ahead of the date fixed for completion of the contract. The contractor also agreed to drill, blast and remove additional sandstone adjacent to but outside the original pit area not contemplated by the original contract. The company agreed that in addition to the 29 cents per cubic yard provided for in the contract, it would pay $1.03 per foot of hole drilled; and it was further agreed that "no additional amount shall be payable for any blasting other than that provided for in this paragraph."

The amendment, which was drafted by the company's legal department, was signed by its field manager Pruess on March 17, 1956, and was signed by Daniels on March 20.

On that date, Daniels mailed to the company a letter previously prepared by its legal counsel in which it was stated that "our contract price was of course fixed upon the assumption that the data which you furnished regarding the formation here was correct. We of course realize that you were under the impression that your data was also correct and we do not mean to intimate any question of bad faith on your part.

"The presence of this bedrock has, as you know, materially increased the cost of our operation, and although we are going ahead with the removal of the overburden pursuant to your orders, we wish it clearly understood that we are doing this with the reservation of our rights to call on you for additional compensation in a reasonable amount to compensate us for this increased cost."

The letter went on to state that the contractor had been advised that in cases of this kind where it had been a "mutual mistake of fact," they were within their legal rights in insisting upon additional compensation "in excess of the unit price specified."

On the following April 11, the legal department for Continental replied, expressing surprise at the letter in view of the provisions of the March 17 amendment, to which they consented "in order to settle the very claims which you are now reopening in your letter of March 20, 1956; that we find ourselves in the position of having once settled what we considered a groundless claim and now having the claim asserted once again."

The claims with respect to additional compensation for excavation were not pressed further and the contractor continued to remove the overburden in accordance with the amendment and accept payment by monthly check with an attached voucher reciting that it was "In full settlement of accounts below. If not correct return without alterations and state differences."

In October 1956, the original contract was again amended to provide for additional stripping caused by a landslide, at 50 cents per cubic yard instead of the 29 cents per cubic yard set forth in the contract. When the contract was completed, the final check in payment of the contract price was accompanied by a letter, calling attention to a paragraph in the contract providing that acceptance of the final payment by the contractor would constitute a release and waiver of all claims by the contractor against the company. The contractor returned the check and later accepted it only when the company had agreed that the acceptance would not effect a release or waiver of any claims it might later press.

An action was then brought by the contractor to recover for the increased cost of the work resulting from excavation of the hard rock which the contractor did not anticipate when the contract was entered into.

The contractor contended that it had entered into the contract in reliance upon representations, made by responsible agents of the company, that with the exception of a designated boulder area, the overburden to be excavated was capable of being removed by the use of heavy dirt-moving equipment without drilling or blasting.

The trial court found as a fact that the contractor's bid of 29 cents per cubic yard was made in reliance on this misrepresentation and that at the time the contractor had removed two-thirds of the material and the rock was encountered the contractor did not know that the representations were deceitfully made. It proceeded with the work on the theory of mutual mistake and at great cost after having asserted its intention to claim extra compensation for the removal of the hard rock. It did not learn that the representations were knowingly false until after the

work was completed. The contractor was granted judgment which was affirmed by the appellate court.

As to the contract provision that the contractor was not relying on any representations or promises of the corporation except those contained in the contract, the court held that such contract provision was against public interest and unenforceable. The theory is that the law cannot condone action that is fraudulent.

The court also held that the acceptance of monthly checks by the contractor, on condition that the checks were in full settlement of accounts with the corporation, would not operate to exculpate corporations from liability for damages for misrepresentations inducing the contractor to enter into the contract.

The appellate court stated that a defrauded party to a partially executed contract does not waive his right to claim the benefits of his bargain by continuing to perform the contract after discovering the fraud, unless he affirmatively indicates his intention to do so.

The company claimed that the execution of the amended contract barred the right to claim extra compensation. The court restricted recovery to the reasonable value of the excavations made prior to the amendment of March 17, 1956, after hard rock had been actually encountered and the contractor had knowledge that the representations with respect to soil conditions were inaccurate or untrue.

The court accordingly awarded damages for the reasonable value of 68,000 cubic yards of hard rock excavated prior to March 17, on the basis of an adjusted unit price, or a total of $49,810, less the $16,994 previously paid at the rate of 29 cents per cubic yard. The contractor was also allowed interest on the sum of $44,912.12, the amount of the check sent as a final payment from January 8, 1957, the date when the check was tendered, until February 10, 1958, when the unconditional tender was made.

(1) Woodmont, Inc. v. Daniels, 274 F. 2d 132, U. S. Court of Appeals, Tenth Circuit, December 23, 1959.

These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by McGraw-Hill Book Company, Inc.: *Legal Phases of Construction Contracts; Legal Guide for Contractors, Architects and Engineers;* and *Legal Cases for Contractors, Architects and Engineers.*

OFFICIAL PROPOSALS

Bids: January 26, 1961

Notice to Contractors:

THE NEW YORK STATE BRIDGE AUTHORITY, BRIDGE PLAZA, POUGHKEEPSIE, N. Y., Pursuant to the provisions of the Highway Law, and Article 3, Title 2 of the Public Authorities Law, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time, on the 26th day of January, 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., on behalf of said Authority, for the following project:

ORANGE & DUTCHESS COUNTIES

KURT G. RAUER, DISTRICT ENGINEER, PLEASANT VALLEY ROAD, POUGHKEEPSIE, NEW YORK

NAME OF PROJECT & MILES	DEPOSIT FOR PLANS	BID DEPOSIT	ENGR'S EST.
Contract NBB. 61-1 Newburgh-Beacon Bridge over Hudson River Contract No. 2— River Crossing Substructure (Piers 1, 2, 3 and 7 Thru 15 of Substructure)	$5.00	$300,000.	$5,402,000.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineer, noted above, and at the office of the State Department of Public Works, 270 Broadway, New York City, and may also be seen at the New York State Bridge Authority Office at Mid Hudson Bridge Plaza, Poughkeepsie, N. Y.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned to the Bureau of Contracts in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications.

Proposal must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the NEW YORK STATE BRIDGE AUTHORITY for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, and Public Authorities Law, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

FOR NEW YORK STATE
BRIDGE AUTHORITY

DR. JOHN L. EDWARDS
CHAIRMAN

Bids: January 16, 1961

Indus Basin Project

WEST PAKISTAN WATER AND POWER DEVELOPMENT AUTHORITY
ADVANCE NOTICE
OF
INTENT TO INVITE TENDERS
FOR THE
CONSTRUCTION OF CANALS AND APPURTENANT WORKS

The above Authority plans to undertake the construction of a number of large canals in West Pakistan. Their construction will be financed through the Indus Basin Development Fund, the operation of which will be administered by the International Bank for Reconstruction and Development (World Bank). The canals, which form a part of the Works embodied in the Indus Basin Settlement Plan will have a total length of about 390 miles and involve approximately 345 million cubic yards of excavation, as well as the construction of several hundred bridges and other canal structures.

The work will be divided into seven or more individual projects the first of which to be undertaken will be the Trimmu-Sidhnai Link Canal. This canal will extend from Trimmu on the Chenab River to near Sidhnai on the Ravi River and have a total length of 44 miles. It will have a capacity of 11,000 cubic feet per second and involve 20 million cubic yards of excavation, the construction of several regulators, bridges, aqueducts and other structures. The second project will be the Sidhnai-Mailsi-Bahawal Link Canal. This canal will extend from a point near Sidhnai on the Ravi River to the Sutlej River near the town of Mailsi, and from that river on to the Bahawal Canal. It will have a capacity at head of 10,100 cubic feet per second which capacity is reduced at intervals along its length to 3,900 cubic feet per second at its terminus. The total length of the link is 69 miles, and its construction will involve about 30 million cubic yards of excavation, several regulators, bridges, aqueducts, siphons and other structures.

The Authority plans to call for tenders for the construction of all or a portion of the Trimmu-Sidhnai Link early in 1961, and for the construction of the Sidhnai-Mailsi-Bahawal Link about midyear 1961. Only contractors who have been prequalified by the Authority will be invited to submit tenders. For this purpose contractors who wish their names to be included on a list to receive the Document for Prequalification are requested to submit the following information to the Authority's Consultants, Tipton and Kalmbach, Inc., at post office Box 589, Lahore, West Pakistan with a copy to their office at 831-14th Street, Denver 2, Colorado, U. S. A.:

1. Name of Company or Firm
2. Country of domicile
3. Full address, name and title of person to whom future correspondence should be directed.

The above information should be sent airmail to reach the offices of the Authority's Consultants on or before 16 January 1961. At that time interested contractors will be furnished with a document describing the work and setting forth the information required from them by the Authority in order to evalute their qualifications for undertaking the proposed canal construction.

Project Director (Links)
WEST PAKISTAN WATER & POWER DEVELOPMENT AUTHORITY

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-5466) will be received at Denver, Colorado, until 2 p.m., Mountain Standard Time, February 23, 1961, for furnishing two (2) oil-pressure, cabinet-type, actuator governors for regulating the speed of two 93,500 horsepower, 225 rpm, vertical-shaft hydraulic turbines for Clear Creek Powerplant, Central Valley Project, California. Delivery is desired within 540 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-5469), Set Aside for Small Business, will be received at Denver, Colorado, until 2 p.m., Mountain Standard Time, February 21, 1961, for furnishing eight (8) 22.96-foot by 22.45-foot fixed-wheel gate frames and anchor bolts for Glen Canyon Dam, Colorado River Storage Project, Arizona-Utah. Delivery is desired within 210 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5465) will be received at Collbran, Colorado, until 10 a.m., Mountain Standard Time, February 14, 1961, for furnishing labor and materials for Upper Molina-Lower Molina 115-Kilovolt Transmission Line and Upper Molina Equalizing Reservoir, Bonham Cottonwood Joint Power and Telephone Lines, Collbran Project, Colorado. Location near Collbran, Colorado. Principal items are 249 structures—furnishing and constructing structures of various types and with maximum pole lengths varying from 35 feet to 80 feet in length; 4.75 miles of line—furnishing and stringing three 266,800 circular-mil ACSR conductors; 6.12 miles of line—furnishing and stringing three No. 2 AWG ACSR conductors; 6.12 miles of line—furnishing and stringing two No. 8 AWG copperweld telephone wires; and other work. Completion time 180 days. For particulars, address Bureau of Reclamation, P. O. Box 360, Salt Lake City 10, Utah; P. O. Box 396, Collbran, Colorado; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5467) will be received at St. Paul, Nebraska, until 10 a.m., Central Standard Time, February 9, 1961, for furnishing labor and materials for Earthwork and structures, Farwell Main Canal and Farwell Central Canal and Laterals, Wasteways and Drains, Farwell Unit, Nebraska, Missouri River Basin Project. Location between Loup City and St. Paul, Nebraska. Principal items are 3,364,000 cu. yds. excavation; 6,923 cu. yds. concrete; 5,486 lin. ft. 12- to 60-inch concrete culvert pipe; 4,222 lin. ft. 12- to 30-inch concrete pressure pipe; 150 cast-iron and steel slide gates and lifts of various sizes; and other work. Completion time 780 days. For particulars, address Bureau of Reclamation, Building 46, Denver Federal Center, Denver 25, Colorado; Post office Box 143, St. Paul, Nebraska; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5470) will be received at St. Paul, Nebraska, until 10 a.m., Central Standard Time, February 16, 1961, for furnishing labor and materials for Earthwork and Bridges, Sherman Feeder Canal, Farwell Unit, Nebraska, Missouri River Basin Project. Location near Arcadia, Nebraska. Principal items are 58,000 cu. yds. of excavation; Constructing one concrete state highway bridge; constructing 10 concrete county bridges with bids permitted on alternate designs of prestressed-precast concrete beam spans or cast-in-place concrete; furnishing and driving prestressed precast concrete piles; and other work. Completion time 500 days. For particulars, address Bureau of Reclamation, P. O. Box 143, St. Paul, Nebraska; Building 46, Denver Federal Center; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

OFFICIAL PROPOSALS

Bids: January 24, 1961

Spruce Run Reservoir Project Spruce Run Dam, Dikes and Appurtenant Works—Contract SR-1

SEALED BIDS will be received from bidders by the Department of Conservation and Economic Development, at its offices, first floor, 205 West State Street, Trenton, N. J., at 11:00 A.M. Eastern Standard Time, on Tuesday, January 24, 1961 and will be opened and read immediately thereafter, for Contract SR-1 for the construction of the Spruce Run dam, dikes A and B, spillway weir and channel, outlet tower and outlet works, gaging weir, access roads and fine grading in vicinity of dam, installation of equipment and other appurtenant work, all as set forth in the specifications. The Spruce Run dam will be approximately 6000 feet in length along the top, will have a maximum height of about 83 feet and will be constructed of earth compacted by rolling. The limestone foundations under the dam, dikes and certain zones on the perimeter of the reservoir will be grouted as specified. The work is located near the Town of Clinton, Hunterdon County, New Jersey.

OFFICIAL PROPOSALS

Bids will be accepted only from bidders prequalified with the Department of Conservation and Economic Development in accordance with R.S. 52:35.

The bid, accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey in an amount not less than 2 percent of the bid, an Agreement of Surety, an Affidavit of Non-Collusion, the name and address of the prequalified subcontractor to do the grouting, drilling, core boring and sampling, an Appointment of Agent by Non-resident Bidders and a revised Financial Statement and Plan and Equipment Statement on prequalification forms, must be enclosed and sealed in an envelope provided for that purpose by the Department. Bids not so submitted will be rejected. Bids must be delivered at the above place on or before the hour named, as no bids will be accepted after the hour specified.

Contract pamphlets containing information for bidders, forms of bid and contract, specifications, requirements as to surety and subcontractor for grouting etc., and separate folders of contract drawings can be obtained in the office of the Chief Construction Engineer of the Bureau of Design and Construction of the Division of Water Policy and Supply of the Department of Conservation and Economic Development, 219 West State Street, Trenton, N. J., upon application in person or by mail, by depositing the sums of $15.00 for each contract pamphlet and $10.00 for each folder of contract drawings. The deposit for the contract pamphlet will be refunded within 30 days of the award of contract upon the return of such document in good condition without written entries. Deposit will not be refunded for the folder of contract drawings. For further particulars apply to the office of the Chief Construction Engineer.

The Commissioner reserves the right to select the bid, the acceptance of which will be most advantageous to the State, price and other factors considered. Any and all bids may be rejected when the Commissioner determines that it is in the public interest so to do.

Salvatore A. Bontempo
Commissioner of Conservation
and Economic Development

Bids: February 21, 1961

Schoolcraft Relief Sewer

ROUGE RIVER TO HUBBELL AVENUE
SECTIONS I AND II
DEPARTMENT OF PUBLIC WORKS
CITY OF DETROIT, MICHIGAN
CONTRACTS PW-3069 AND PW-3070

Sealed proposals for the construction of the Schoolcraft Relief Sewer, Sections I and II, will be received at the Office of the City Engineer, 528 City-County Building, Detroit 26, Michigan, until 2:00 P.M., Detroit time, February 21, 1961, and then at such place and time publicly opened and read aloud.

The work is separated into the two contracts listed below. Bidders may bid each contract separately or may submit a combined bid for both contracts.

Contract PW-3069 (Section I) consists of approximately 1.86 miles of 13'-0" inside diameter plain monolithic concrete sewer, to be built in tunnel in Rouge Golf Course, Burt Road, and Glendale Avenue, from the Rouge River to Southfield Highway, a reinforced concrete backwater gate chamber, and a diversion chamber.

Contract PW-3070 (Section II) consists of approximately 1.58 miles of 11'-3" inside diameter plain monolithic concrete sewer to be built in tunnel in Glendale and Tyler, from Southfield to Hubbell.

The Bidding Documents which must be used in submitting a proposal may be examined at the Office of the City Engineer during regular business hours, and copies may be obtained upon deposit of $25.00 per set, which includes both contracts. The deposit will be refunded upon return of the Bidding Documents in good condition within 10 days after the date for opening bids or if used in submitting a proposal.

Each proposal must be accompanied by a certified check, bank draft, or a satisfactory surety bid bond in an amount not less than 5 percent of the total bid price as guarantee and security for the acceptance of the Contract. Bidders submitting separate proposals for each contract may combine the individual amounts required in one check or bond.

Checks shall be made payable to the Treasurer, City of Detroit.

No proposal once submitted may be withdrawn for at least 45 days after the actual opening of bids. The City of Detroit reserves the right to waive any irregularity in any bid, or to reject any or all bids, should it be deemed for its best interest.

CITY OF DETROIT
GLENN C. RICHARDS
Commissioner of Public Works

M. F. WAGNITZ
City Engineer

OFFICIAL PROPOSAL

RATE: $2.70 per line (or fraction) per insertion.

CLOSING DATE: 10:30 a.m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Engineering News-Record, P. O. Box 12, New York 36, N. Y.

OFFICIAL PROPOSALS

diameter plain monolithic concrete sewer, to be built in tunnel in Rouge Golf Course, Burt Road, and Glendale Avenue, from the Rouge River to Southfield Highway, a reinforced concrete backwater gate chamber, and a diversion chamber.

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CITY OF DETROIT
GLENN C. RICHARDS
Commissioner of Public Works

M. F. WAGNITZ
City Engineer

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• *POSITIONS VACANT*

Electrical System Design Engineer. At least 3 years experience in transmission, distribution or substation design. Resident Engineer — experienced in construction of rural type transmission, distribution and substation facilities. These openings offer permanent employment with opportunity for advancement, with long-established Midwest consulting firm. P-5810, Engineering News-Record.

Engineer—Estimator—Experienced in plant, mill and highway bridge construction. Location — Jacksonville, Florida. Send complete resume with anticipated salary to: P-5806, Engineering News-Record.

General Superintendent for roads, sewers and utility work in New Jersey area. Give full details as to age, experience, marital status and salary desired. P-5803, Engineering News-Record.

Civil Engineer. Construction materials company with 32 locations in New Jersey & Pennsylvania has an opening in engineering department for engineer with experience in aggregate plant layout and design. Excellent working conditions, fringe benefits. Send resume to Houdaille Construction Materials, Inc., 10 Park Place, Morristown, N. J., Attention Personnel Manager.

Lead Draftsman—Concrete Reinforcing Steel Engineering Dept. Should have 5 yrs. experience in detailing Reinforcing Steel. Experience in estimating and sales also desirable but not necessary. Salary open. Write: Phoenix Manufacturing Co., Division of Union Tank Car Company—Attn: Mr. C. E. Hunt, P. O. Box 1207, Joliet, Illinois.

Equipment Superintendent or Master Mechanic to organize and manage a maintenance and repair program for a medium size highway contractor. Midwest Location. P-5853, Engineering News-Record.

Sales Engineer—Sales positions open with large form manufacturer selling to contractors. Some knowledge of construction essential. If you are interested in a real opportunity for high earnings with a company that has made steady progress in the industry, write giving qualifications and resume of experience to P-5854, Engineering News-Record.

(Continued on opposite page)

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• POSITIONS VACANT
(Continued from opposite page)

Project Manager—for medium size building contractor located in central Connecticut. Graduate engineer preferred. Experience required in subcontracting, coordination with architects, engineers, and owners, scheduling and expediting. Senior position with excellent opportunity for advancement. Send full details and salary requirements. P-5851, Engineering News-Record.

Experienced civil engineer for southern Connecticut in estimating and supervising site work. Age limit, under 50. Send all pertinent facts, salary desired, etc. P-5858, Engineering News-Record.

Creative Structural Engineer. To participate in analytical development of advanced reinforced and prestressed concrete structures. Work includes design development, technical writing and opportunities for engineering consultation and lecturing before professional groups. Small amount of traveling. Degree in Civil Engineering required, with advanced degree in structures desirable. Concrete structural design experience required. Familiarity with prestressing and concrete shells desirable. Must be able to use advanced mathematics as a tool in developing new design methods. Job located at Chicago headquarters of a national engineering organization. Excellent working conditions and advancement opportunities. Salary commensurate with experience and ability. Maximum age forty. Submit complete outline of background and experience. P-1058, Engineering News-Record.

Draughtsmen to become part of expanding organization; competent, experienced with engineering work including reinforced concrete, piping and equipment. Also C.E. graduate to assist draughtsmen with layout of sewage treatment works. Supply samples of work and brief resume of experience—Lewis E. Kohl, Inc., 16 State Street, Rochester, N. Y.

General Superintendent. Midwestern utility contractor, city distribution, cross country pipelines of all types, industrial piping and fabrication. Must have good following of top construction men, customer contacts and customer relations. Some estimating experience required and engineering experience would be an asset. Send complete resume. P-5875, Engineering News-Record.

Wanted—Engineer with field inspection experience on general and heavy construction projects. For overseas assignment with long-established consulting engineering firm. Permanent employment at salary commensurate with ability. Please send resume and salary requirements to P-5895, Engineering News-Record.

Structural Testing & Stress Analysis. Electrical strain gage experience. Model experience helpful. Give complete resume and salary requirements. Chicago. P-5878, Engineering News-Record.

Construction Accountant for established, middle-sized general contractor. Accounts payable, payroll, and costs, full set of books to taxes. Good salary, living and working conditions in small central Maryland city. Must have experience, capacity for hard work, and good record. Write P-5892, Engineering News-Record.

Structural Engineer. Design, investigations, reports. Responsible position in small office. Industrial and commercial structures. Min. 10 yrs. experience. Send complete resume. Chicago. P-5883, Engineering News-Record.

Public Works Administrator. Wanted by Benton Township an experienced man with administrative ability to maintain 60 miles of sanitary sewers and lift stations. Requires man with good public relation record, who knows sewer construction, civil engineer preferred. Salary open. Send application to R. W. Petrie and Associates, P.O. Box 56, Benton Harbor, Michigan.

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A Midwest Engineering and Architectural firm with a million dollar a year income wants Engineer or Architect to contact clients and prospective clients.

Please send complete personal data.

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P-5888, Engineering News-Record
520 No. Michigan Avenue, Chicago 11, Ill.

• POSITIONS VACANT

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Civil Engineer—Experienced all phases of municipal development. Capable of assuming full charge Civil Department in Midwest engineering firm. Possibility of affiliation to responsible party. Indicate availability. P-5886, Engineering News-Record.

Highway Design Engineer, preferably registered, to head up the preparation of contract plans and specs for expressway design contract in Connecticut. Minimum 5 yrs. experience required. Salary $7800-9000. Send complete resume. P-5816, Engineering News-Record.

Wanted Civil Engineer with 5-10 years Heavy Dam Construction experience for established Construction Company. Prefer a man 10 years of age or over to work in home office as Project Manager on Dam Construction and other heavy construction work. Martin K. Eby Construction Co., Inc., P.O. Box 1679, Wichita, Kansas.

Budget & Fiscal Specialist—Needed to complete Advisory Group assigned to assist Government of South Vietnam in organizing a Department of Highways in the Ministry of Public Works for the planning, administration, coordination and supervision of all highway activities and appurtenant services. Must be familiar with modern highway operations with special knowledge of budget requirements, office procedures, and accepted AASHO accounting practices. Will be required to make studies of and recommend field forms and procedures for the reporting and proper control of incoming available funds, both maintenance and construction; and for the expenditures therefrom. Will supervise studies of present costs and assist in preparing annual budgets for the operation of a national highway system. Will be at all times in a position of training local personnel to perform above duties. College education or equivalent in accounting and office procedures required. Broad knowledge of highway and fiscal budgeting and control with at least ten years of highway budget and cost records and control. Legal or business administration may be advantageous. Two years employment contract. Dependents authorized to accompany. Salary to $12,000 per annum plus housing. U. S. citizenship required. Send resume or write for application blank to Capitol Engineering Corporation, Dillsburg, Pennsylvania.

Engineering Assistant (Westminster) Salary $575 to $690, college graduate in engineering, plus exp. in public works or related eng. work. Calif. E.I.T. Certificate or eligibility. Apply City Clerk, City Hall, Westminster, Calif. prior to Feb. 3rd, 1961.

Wanted Salesman Construction Engineer sales and construction experience preferred. Must be alert aggressive able to communicate with management and construction personnel and find non routine problems stimulating. Location Jefferson, Iowa. Job will be with a growing construction firm engaged in the sale and construction of pre-fabricated steel building and general construction. State wide sales organization, could advance to general management. Send resume and reference with first contract. P-5902, Engineering News-Record.

(Continued on the following page)

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(Continued from preceding page)

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Construction: Graduate Engineer, extensive experience including industrial and chemical plant, need job, go anywhere. PW-5767, Engineering News-Record.

Construction Supt., Engineer. Twenty years experience on buildings, available soon. PW-5818, Engineering News-Record.

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Estimating Engineer—Analyst. Preparation/ analysis of estimates, costs, budgets, financial/economic studies, for construction/operation of high-pressure, high-temperature steam, chemical plants, foundry, metalworking shops; knowledge EDP, computer programming; $11,200. PW-5849, Engineering News-Record.

Project Manager. 36 years experience indus- trial and heavy construction, mechanical and structural projects, estimates to completions. PW-5865, Engineering News-Record.

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Construction Manager. Heavy construction experience as Job Engineer and Supt. from bid to completion, both field and office. Desires position as Project Mgr or Supt in Central New Jersey or vicinity, with progressive firm. Age 39. PW-5882, Engineering News-Record.

Soils Engineer. Civil, M.S., Licensed. Several years varied experience in soils and foundations. Location east. $10,000 min. PW-5885, Engineering News-Record.

Project Manager—P.E.—B.S.C.E.—Age 36 —Experienced in all phases design and construction of large industrial installations. Desires position with industrial concern. PW-5906, Engineering News-Record.

Chief Estimator—20 yrs. successful experi- ence bridges, highways, docks, sewage plants. P.E. 40, capable of assuming full charge estimating dept. G.C. Ambitious, hard working. N.Y.C. & vicinity. PW-5905, Engineering News-Record.

Construction Supt., age 53: Available about February 15, all types construction; best references, prefer southeast. PW-5908, Engineering News-Record.

Soils Engineering Technician. three years exp. all phases of light & heavy, military & civil, construction. Detailed soils testing & inspection knowledge with extensive concrete lab. & field experience. Currently working for top consultant on government contract in a lab. supervisory position. Desire similar position with responsibility. Available in March. Will relocate anywhere in U. S. Resume, references, & personal data on request. PW-5907, Engineering News-Record.

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Gen. Supt.—Estimator: Exp. on airbase, highway; paving, exc., asph. PW-5911, Engineering News-Record.

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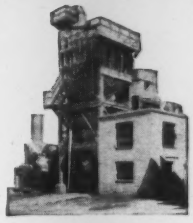

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Editorials

Roadbuilding Speed-up

IT IS GRATIFYING TO READ that President-elect Kennedy favors speeding up the highway program instead of stretching it out and opposes changing the planned construction schedule balance between urban and rural projects to more emphasis on rural. Since Congress was toying with these enervating proposals before the election, it will be interesting to see if the lawmakers can now be more realistic.

One factor favoring such a changed attitude is the concern being voiced over a deepening business recession. A step-up in highway construction, which is a countrywide activity, would unquestionably be a useful antidote. Neither highways, nor all public works together, can by themselves turn around such a huge and complex affair as the U.S. economy, but they can make a useful contribution to increased employment and business activity.

A warning, however, is in order: Any plan to speed roadbuilding must take into account the peculiar nature of the Highway Trust Fund from which federal aid is funneled. The "pay-as-you-go" policy currently in effect limits outlays from the Fund to its income. Presently, income and outgo are roughly equal. There is, perhaps, a $200-million working balance in the Fund, but that wouldn't support much of a speed-up.

It will be recalled that in 1958 Congress authorized an emergency highway expenditure of $400 million to help ease that year's business recession, but required that the Fund pay it back with future income. The net result was simply to give the program an on-and-off tempo without increasing total expenditures. Any possible gain from the emergency appropriation of 1958 was offset by a slow-down in highway spending in 1959.

To be truly effective, a speed-up in highway spending must be accompanied by a real increase in the Highway Trust Fund. Congress will have to face that fact or the sad experience of 1958-59 will be repeated.

Progress Report on Buckling

RECENT PUBLICATION of an authoritative analysis of buckling phenomena based on many years of research should lead to better and more economical structural design. It makes possible replacement of inaccurate assumptions with facts ascertained from observations of the behavior of materials in field and laboratory tests.

Titled "Guide to Design Criteria for Metal Compression Members," the publication was developed by the Column Research Council of the Engineering Foundation, which was formed in 1944 to aid research of metal columns.

The Guide meets a primary need of the profession —practical design procedures that are as simple as possible and yet consistent with accurate and safe prediction of structural strength. It deals with centrally loaded columns, compression member details, laterally unsupported beams and beam-columns. Such other important questions as local buckling in plate-girder webs, plate-girder stiffener design and buckling of pony-truss chords are expected to be covered in a second edition.

The Guide doesn't attempt to supplant existing specifications, but specification writers are definitely challenged by its contents to take a careful look at buckling design requirements. And a good place to start is with some of the long-accepted assumptions of column action.

It is now known, for example, that the effect of acidental end eccentricity in centrally loaded columns plays a secondary role to residual stress in determining column strength. For this and several other reasons, the once popular secant formula for column design can no longer be considered useful. In its place the Column Research Council recommends the tangent modulus (of elasticity) formula as the proper basis for establishment of working-load formulas. As a further aid the Guide presents design equations in which residual stress is taken into account.

Another concept subject to question is that it is conservative to treat all centrally loaded columns as pin ended. When this is done, the slenderness ratio is multiplied by a factor of unity in column design formulas. Actually, this factor may have a variety of values. The Guide illustrates some common cases where the factor may be two or more. If a factor of unity were used in such cases, buckling strength might be overestimated as much as four times or more.

The Guide gives much useful data on laterally unsupported beams, but designers and specification writers will find one troublesome question still unanswered: How much resistance must a brace provide to qualify as a lateral support? The Guide points out that embedment of the compression flange in a concrete floor or roof slab, or complete encasement of a beam in mesh reinforced concrete fireproofing, should permit use of the full allowable working stress in design. But it reports that a precise answer to how much force is induced in a lateral support is impracticable. Apparently, the customary practice of designing each lateral support for 2% of the total compressive force in the compression flange is still as good a method as any.

The Column Research Council has done a splendid job in assembling and analyzing the vast amount of information available on the behavior of compression members and in distilling from it the useful data published in the Guide ($5 from Robert B. Harris, Council secretary, 319 W. Engineering, University of Michigan, Ann Arbor, Mich.). The engineering profession is deeply indebted to the men who participated in this work. It is gratifying to know that they are continuing this research and regard the present Guide only as a major progress report.

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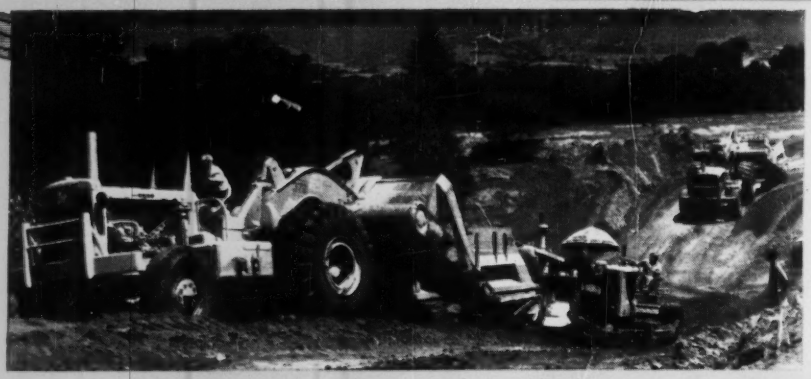

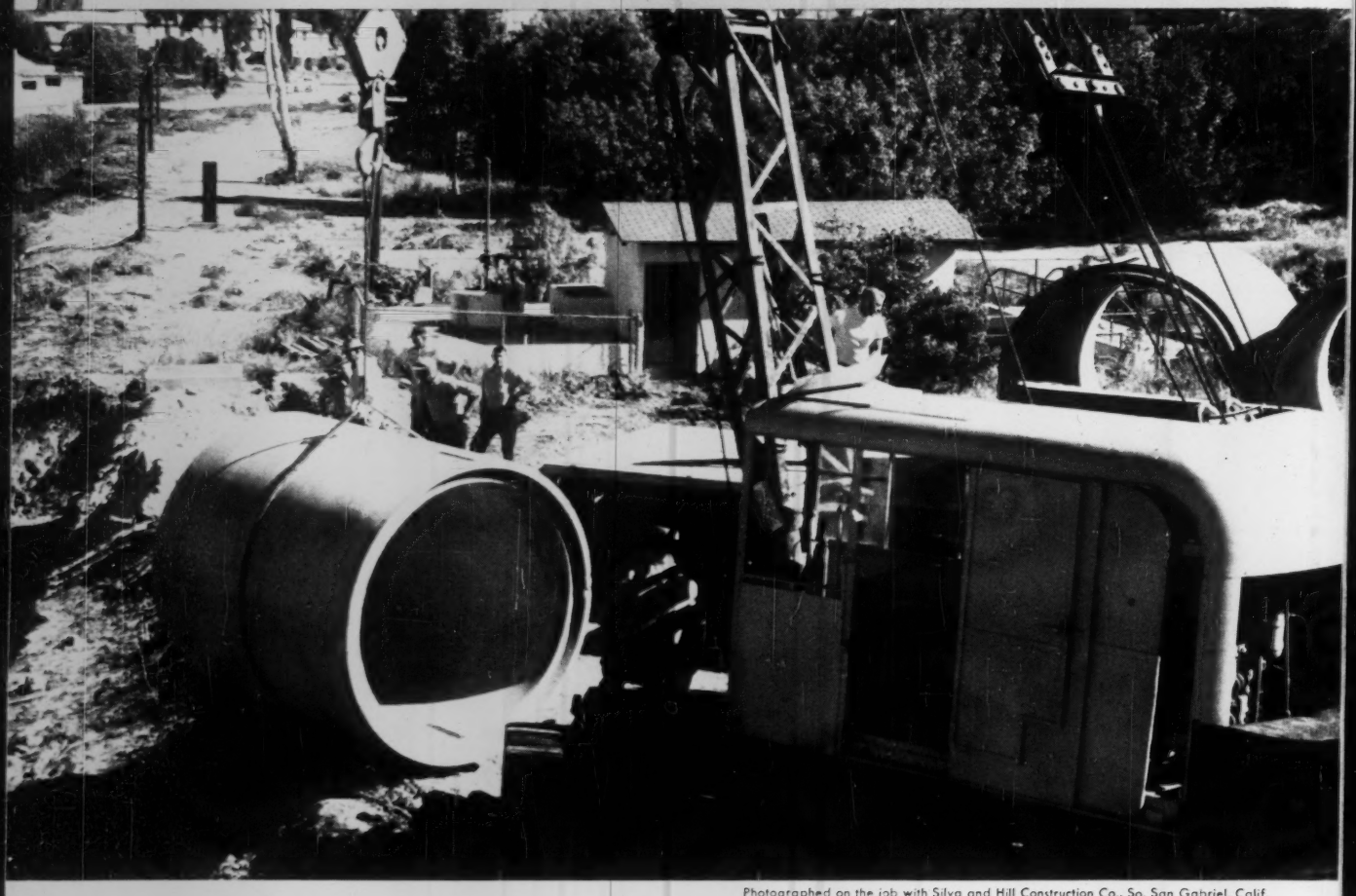

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